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A Monthly Journal Devoted to the Building, Equipment and Administration of Hospitals, Sanatoriums and Allied Institutions, and to Their Medical, Surgical and Nursing Services

Vol. XXXIII *September, 1929* No. 3

The Rise in Educational Standards for Schools of Nursing*

By ADA BELLE McCLEERY

Superintendent, Evanston Hospital, Evanston, Ill.

THIS is a skeptical age. We ought not to attempt to discuss the effect of a rise in educational standards without first noting to what extent those standards have risen.

After attacking this preliminary problem, we must indicate a few of the influences that have effected a general change in educational standards and we must observe the more important results of this change upon allied professions. Then, with this background, we shall be able to discuss more intelligently the effect of these raised educational standards upon our hospitals and schools of nursing.

We may assume that announcements issued by a nursing school in any given year for the purpose of placing information before prospective students will give a fairly accurate idea of the educational program of the school in that year. For our present study, the years 1900 and 1929 were selected. Twenty-two schools, all of them established not later than 1900 and as well distributed geographically as that restriction would permit, were invited to assist by sending to us not only their current bulletins but also copies of their bulletins or announcements published in 1900.

Only one of the twenty-two schools was able to produce an announcement for 1900. This fact alone indicates how little emphasis was placed upon the subject of education by both schools and hospitals twenty-nine years ago. The 1900 announcement came from a Midwestern school, the first one established west of the Alleghenies. It was founded in 1880 and was independent of hospital control.

Although no other school met the letter of our request, many responded to its spirit by sending the earliest announcements in their files, or excerpts from hospital reports, from which I shall give some of the high lights.

Let us begin with that trio of Eastern schools founded in 1873, which were, in 1900, already twenty-seven years of age.

One of the three found nothing in the 1900 report relative to the curriculum, although in 1890 there had been given forty-one lectures by doctors, thirty-nine by the superintendent of nurses, twelve on massage and twelve, more or less, on cooking.

The second wrote that the following statement appeared in a report for 1900: "The teaching will be given by visiting and resident physicians and surgeons at the bedside of the patient and by the superintendent, assistant superintendents and head nurses. Lectures, demonstrations and recitations will take place from time to time and examinations at stated periods." The outline of instruction was too general to give an accurate idea of its scope.

The third school gave no information for 1900, but submitted an announcement for 1901. Three textbooks were in use in this school, Kimber's "Anatomy," Clara Week's "Text Book on Nursing," and "Probationers' Notes on Nursing." Seventeen lectures arranged for the winter were listed. They covered a wide range—one lecture

*Read at the thirty-first convention of the American Hospital Association, Atlantic City, N. J., June 17-21, 1929.

being on the brain, another on the preparation of antiseptic gauze and a third on German measles. The additional instruction, covering the simplest of nursing procedures, was summed up in fourteen sentences closing with "the preparation of nice articles of diet for the sick." One is reminded of the great change in methods of treatment by the mention of instruction in the application of leeches.

One of the most interesting parts of this bulletin is that devoted to a special service of the pupil nurse. During the last eight months of her two-year course, she was assigned the care of patients in private families. Her duties and responsibilities were specified with exactness. There was no excuse for argument with the family cook over who should make the beef tea. Even the question of the nurse's personal laundry was settled—"not more than eighteen pieces are to be put in the family wash, and no white skirts."

"Rest Periods" Required

The family is respectfully reminded that the nurse must have rest and an hour in the fresh air once or twice a week, although "in confinement cases the nurse must not expect to be out of the house for at least two weeks." The charge to the family was fifteen dollars a week. But even this formal announcement ignored the subject of an educational standard for admission and made no reference to the qualifications of the faculty.

In 1889 there was established on the Atlantic Coast another school whose influence has been felt. Yet prior to 1901 all the information issued by this school to prospective students was compressed into a two-page pamphlet. We find that classes were formed and pupils were received in the Spring, and that during the two months' probation, examinations were given in "reading, penmanship, simple arithmetic and English dictation." The examinations were "to test the applicant's ability to read aloud well, to write legibly and accurately, to understand mathematics as far as fractions and per cent, and to take notes of lectures." This amount of education was "indispensable" for a member of the school.

In 1901, this school required evidence that a prospective student had had a "good, general English education." There was also by this time a general plan of instruction, with emphasis placed on household economics and hygiene.

From the Pacific Coast came an undated pamphlet from a school founded in 1900. The pamphlet was accompanied by a letter stating that although the exact date of publication could not be given, the booklet was issued during the early history of the school. It states that the applicant must have an "ordinary common-school education." The course of training outlined followed almost word for word the simple course of one of the outstanding Eastern schools. There was a touch of originality, however, in the statement that "at the end of the first year, a preliminary examination of each nurse will be held, and according to its results she will be rejected, set back in her course or continued in her work."

Returning to the announcement for 1900, submitted by the Midwestern school mentioned above, we see the applicant informed that she "must have a thorough knowledge of common and decimal fractions, weights, measures and percentages," and that during the probation month an examination would be given in reading, penmanship, English dictation and arithmetic.

The number of weeks spent on the different wards was given. The classes and lectures were outlined, in a sketchy manner, to be sure, but it was clear that this school was making an attempt to give formal class work.

The textbooks in use were four: Kimber's "Anatomy," Hampton's "Nursing," Dock's "Materia Medica," and Boland's "Cooking for the Sick." The beginning of a library was shown by the listing of fifty-seven books of reference but there was no statement relative to a teaching staff.

Methods of Approach Differ

The foregoing cross section illustrates the status of the education of the nurse at the beginning of the twentieth century. What is the status to-day? Our conclusions are based again on the school announcements. During the twenty-nine years there has been a decided change in the method of approaching the prospective student. The current bulletins are suggestive of high class salesmanship, as they are beautifully illustrated and set forth in a graphic manner the attractions of both school and hospital. Descriptions of the housing conditions, recreational facilities and extra-curricular activities are included, as well as a definite outline of the course of study.

The typical bulletin of 1929 begins by listing the faculty and teaching staff, giving not only the name of each member but also her formal education and her experience since graduation. Bachelor's and master's degrees are plentiful. Each graduate nurse associated with the school is named and her capacity designated. The titles of lectures are mentioned and frequently the relationship of the lecturer to the hospital or medical school is stated.

In reviewing the curriculum, one is impressed

with the fact that there is a definite educational plan beginning with a foundation of basic subjects and advancing in a logical manner. The bulletin shows, also, a definite plan in regard to the teaching that occurs at the bedside of the patient, for no longer is the student permitted to approach the patient without knowing how to carry out the assigned procedure. However simple it may be, she has been taught its details and its underlying principles and she has demonstrated her ability to carry it through successfully. While giving this nursing care, she is encouraged to observe accurately and to work intelligently. Step by step she is advanced through a definite educational program.

Bulletins Detail Courses Offered

Although the scope of teaching varies with the facilities at the disposal of the school, all of the bulletins examined give a comprehensive statement of the subject matter of each course, including, in most cases, the number of hours devoted to lecture, recitation and laboratory periods. Demonstration rooms, lecture halls, laboratories and reference libraries are repeatedly mentioned and frequently pictured.

The educational requirements for admission show little variation in the twenty-two schools, for without exception, the candidate must give evidence of having been graduated from an accredited high school. Or if she is a candidate for the degree-diploma course, she must have completed acceptably at least two years of college. Several of the bulletins, in listing the names of enrolled students, mention specifically any academic preparation beyond that given in high school. This fact demonstrates that many students have either advanced standing or bachelor's degrees.

If we agree, then, that faculty, student body, curriculum, libraries, lecture halls and laboratories are the requisites of a school, we need do no more than compare the state of those requisites in 1900 with their state in 1929. Without further discussion, we may conclude that there has been an improvement of the educational standards in our schools of nursing.

This improvement in conditions is not, however, an isolated phenomenon, limited to nursing schools alone. Rather it is the reflection of a widespread change in attitude toward educational requirements in general. The whole story of public education during this same twenty-nine year period illustrates this change.

In 1900, seven out of eight children left school at or before the fifteenth birthday. The formal schooling of the typical child did not extend beyond the sixth or seventh grade. During the first quarter of the twentieth century, the total enrollment in the public schools showed a marked increase, and this increase was almost entirely concentrated in the high schools where the total enrollment rose 603.11 per cent, as compared to a mere 40.15 per cent in the elementary schools.

Many factors influenced this general advancement in public education. One of the early ones undoubtedly was the awakening of a sense of responsibility for those potential citizens who, because of the policy of unrestricted immigration, were coming into this country in ever increasing numbers, and who, far too frequently, could neither read nor write. One of the later factors undoubtedly was the general prosperity of the entire country. Some of the other factors were the great industrial changes requiring development of technical knowledge; scientific discoveries making a knowledge of science the common possession of all; the rapid growth of cities; the increased ease of communication by means of newspapers, telephones, automobiles and radios; the opening of libraries; the adult education movement, and the entry of women into the economic and political world. Thus, as civilization increased in complexity, education developed and broadened so as to give tools for learning both to the youth and to the adult. And learning, in turn, stimulated ambition, awakened ideals and guided lives into work of great usefulness.

During this period of educational progress, many professions were adjusting themselves to the new standards. Hospital workers are concerned primarily with three groups, the dietitians, the medical social workers and the medical profession.

Importance of Theory Recognized

The dietitians, becoming aware of the importance of adding theoretic education to practical experience, especially in the basic sciences, developed more adequate courses in theory, leading to a bachelor of science degree. And a six months' dietitian's internship in an approved hospital was adopted as a prerequisite to membership in the American Dietetic Association.

About 1917, the American Association of Hospital Social Workers, realizing that one of the difficulties confronting that group was the lack of properly trained personnel, began to seek a remedy. They first analyzed the function of a medical social worker and then outlined the essential preparation of such a worker. Later they stimulated training centers, with the result that several thoroughly equipped schools of social work have added courses in medical social work

and have developed teachers and teaching methods for these courses. The wisdom of these steps may be shown by comparing the prepared and the unprepared worker, and the type of work done by each. The properly trained social worker is more flexible, more adaptable, more tolerant and more resourceful. The wider experience of life gives her a better understanding of its varied problems.

The advance in medical education is even more marked. With the grading of medical schools there came a new standard of instruction. The restriction of the number of students to those who were properly qualified and for whom the schools had the facilities for clinical teaching, the discoveries in science, the invention of instruments of precision, the shift in emphasis from the cure to the prevention of disease, and the investment of vast sums of money in research laboratories and in hospitals are a few of the factors that helped to develop a more scientific basis for the practice of medicine, surgery and obstetrics, and that resulted in increasing the effectiveness of the treatment received by the patient.

The experience of these other groups shows that nursing was not peculiar in seeking to advance educationally. Education must grow as knowledge increases, and the experiment of yesterday becomes the accepted procedure of to-day. If the educational standards of the faculty and of the students of our schools of nursing had not advanced during the twenty-nine years just completed, the work of the other groups concerned with the welfare of the patient would have been seriously affected. There is such an interlocking relationship of doctors, nurses, dietitians and social workers in the care of the sick that if any one group steps forward, all must go forward.

All Patients Need Intelligent Nursing

In schools of nursing, the effect of these raised educational standards has been the drawing of a dividing line between nursing care and the responsibility to the student, resulting in a recognition of the necessity of all patients having intelligent nursing and of the futility of a curriculum below or parallel to that of a secondary school.

Under the present plan of instruction, it would be virtually impossible for some of the mistakes to occur that took place under the old system; for instance, the patient's being required to eat bread spread with castor oil because the order "give in sandwich" was misinterpreted; or to chew magnesium sulphate crystals because the nurse was ignorant of the medicine that she was administering.

When there exists a relationship as close as that between hospitals and schools of nursing, any innovation in the one affects the other. If the changes that have occurred in nursing schools are traced, the adjustments made by the hospitals to meet the changes should be traced as well.

With few notable exceptions, the hospital started a training school as a matter of expediency. It seemed to be an inexpensive method of obtaining nursing service. Whatever the pupil may have lacked in formal schooling was more than offset by her devotion, by her obedience and by her generous estimate of a day's work.

When only the very poor went to hospitals and the sick in the home wanted skilled nursing, the hospital decided that it was expedient to send the pupil nurse into the home of the private patient. She had been of great assistance in keeping the hospital pay roll within bounds, and the meeting of this new demand gave her the opportunity of assisting with other expenses, as most, if not all of the money she earned while on duty in private families was paid to the institution that she represented.

School of Nursing Organized

But as soon as the training schools began to have regular class periods and to follow a course of instruction, it was clear that the pupil nursing in the home was in an unfortunate position. Consequently the first attempt to convert a training school into a school of nursing resulted in abolishing the practice of sending pupils into the home. The hospital accepted the loss of this revenue.

The pupil had demonstrated her ability to earn and many of the hospitals were desperately poor. As soon, therefore, as a higher social class began to use hospitals, demanding more service than was given to ward patients, it was not unnatural that the custom arose of assigning pupil nurses to private patients for special duty. This custom later grew to be a pernicious one.

But in order to prepare the pupil for the responsibilities that would come to her as a graduate nurse, it became necessary for the school to give a more balanced experience on the wards. With the pupil spending from twelve to eighteen months on private duty, she could not become familiar with all branches of nursing, and the result was that private duty for pupils was discontinued.

When the number of classes increased and a regular curriculum was followed it became evident that the student's ability to keep awake during the class hours and to prepare assignments was hampered by sheer physical fatigue. This resulted in the shorter day, the shorter week and a longer vacation period. Thus, again, again and

again, new problems have arisen; again, again and again, the hospitals have endeavored to solve them. They have provided beautiful homes, facilities for recreation, classrooms, laboratories, libraries, teachers, supervisors, ward helpers, clerical assistants and graduate nurses for general ward duty, until now no one even pretends that a school of nursing is a cheap way of providing nursing service.

The principles of nursing education are based on the fundamental educational truth that learning comes by actual doing. This does not alter the fact, however, that the practice of nursing has grown more complex as civilization has grown more complex. Nor does it alter the fact that a school of nursing, like any college, professional, or technical school cannot operate without funds if it is to retain its influence and effectiveness.

What is the secret of the willingness of the hospital to meet the raised educational standards? The secret lies in the hospital's appreciation of the fact that these raised standards result in more intelligent nursing service. Superior work is always done in a teaching atmosphere. The hospital has grown conscious, too, of a financial responsibility for the nursing care of its patients, and has been attempting to meet this responsibility not only by providing graduate nurses for general ward duty, but also by supporting the nursing school in its raised educational standards just as far as it is financially able to do so.

Hospital and school—each can safely credit the other with a sincerity equal to its own. And they can face the future by saying, with Frederick P. Kepper, "May each do his bit toward saving the best of the old, toward taming down the extravagances of the new and finally toward the highly difficult job of fitting the two together."

Making the Hospital Into a Health Inventorium

"The health inventorium is destined to do more towards making the hospital a real center of communal health than anything that has been done so far," J. R. Mannix, superintendent, Elyria Memorial Hospital, Elyria, Ohio, emphasizes in a paper he has called, "Promoting the Hospital in Our Community."

"Our ultimate goal is preventive medicine," Mr. Mannix continues. "Preventive medicine presupposes regular physical examinations by specialists. The health inventorium plan suggests that the hospital furnish sufficient examining rooms to which any legalized practitioner may bring his patients for examinations. The hospital shall furnish to the practitioner every aid, consultants when necessary, laboratory and x-ray department assistance. The hospital will make a nominal charge for clerical help and x-ray and laboratory service.

"National advertising, particularly by insurance companies has had the effect of bringing home to the general public the importance of regular health examinations. A health inventorium service in the hospital, and every available means for preventing illness will do much to reduce the discomfort of the communities the hospital serves. When guests leave the doors of the hospital well pleased, then there need be no worry about popularizing the hospital."

The Patient—the Center of the Hospital Picture

"The patient stands in the center of the hospital picture. Whatever functions the hospital has taken on or will in the future take on, its service will be less valuable unless these functions center around the care of the sick."

These are the words of Dr. John A. Hartwell, president, New York Academy of Medicine, who also stresses the fact that "the care of the sick has expanded to include the health of the entire community."

"The hospital, as at present organized, should represent the brain center of all those activities that benefit the individual sick persons and the health of the community within its sphere of influence," Doctor Hartwell continues. "It is this central idea that the hospital is primarily a conserver and restorer of health and that the care of health is its paramount responsibility that gives to the hospital the atmosphere that is so evident in our first-class institutions.

"Unless the authorities who are responsible for the existence of the hospital are able to command sufficiently competent medical service, it were better that the hospital did not exist."

Teaching Right Food Habits Through the Nutrition Clinic

A nutrition clinic that has been functioning successfully as a part of the out-patient department of Peter Bent Brigham Hospital, Boston, since early in 1921, is described in a recent issue of the *Trained Nurse and Hospital Review.*

Although the clinic began by treating cases of anemia, asthma, constipation and other conditions, other clinics have taken over the treatment of these cases and the nutrition clinic is now primarily concerned with overweight and underweight patients. Since the overweight patients predominate the clinic is sometimes called the obesity clinic. All patients admitted to the clinic are referred from the general medical service in the out-door department. Surgical cases needing special diets are sent first to the medical clinics where the patient has a complete physical examination before going for dietetic treatment. The medical history is sent to the nutrition clinic with the patient for the convenience of the dietitian working in the clinic.

The clinic has been successful in reducing the weight of overweight persons, in building up persons who are underweight and in teaching all of its patients the importance of food as a cure and as a preventive.

Who Shall Pay the Hospital for Its Care of Highway Accident Cases?*

By EMIL FRANKEL
Director of Research, New Jersey State Department of Institutions and Agencies, Trenton, N. J.

THE care of highway accident cases is beginning to loom comparatively large in the total hospital service. The records of ten general hospitals selected at random show that 4.3 per cent of all the in-patients treated during the year were highway accident cases and that 5.4 per cent of the total patient days served went to the care of the victims of highway accidents. In these same hospitals industrial accident cases have receded somewhat in importance, representing 2.4 per cent of the total patient list and 3.1 per cent of the total patient days.[1]

In a number of hospitals, highway accident cases constituted a larger number of patients and patient days than the average for the group of hospitals indicates. In one hospital, 8.1 per cent of all patients were highway accident cases and in two others the percentages of highway accident patients were 16.5 and 16.6 of the total number, respectively. Considering patient days, three hospitals recorded between 7 and 8 per cent of their total patient days as having been rendered to highway accident cases, one recorded 9 per cent and one over 10 per cent.

Survey of Accident Cases Is Made

With a view to obtaining facts that would throw light upon the hospital problems arising out of the care of highway accident cases, the research division, Department of Institutions and Agencies, made a study of such cases treated in nineteen representative hospitals. These hospitals supplied detailed records that showed for each patient the type of care given and the number of days spent in hospital, the amount of the hospital bill rendered and the amount paid. The data obtained may be summarized as follows:

1. A total of 1,781 patients with 22,440 hospital days represented an average stay of 12.6 days per patient. Of the total of 22,440 patient days, 5,063, or 23 per cent, were classed as private and semiprivate days and 17,377, or 77 per cent, as ward days.

2. To the 1,781 patients were rendered bills totaling $106,089, an average of $59.57 per patient and $4.73 per patient day.

3. Of the total hospital bill of $106,089, the hospitals have been able to collect only $59,530, or 56 per cent, the difference of $46,559 remaining unpaid. The majority of the hospitals reporting do not expect to recover even a small portion of the amount unpaid.

Time Spent in Hospitals Shown

A study of the time that 1,200 persons injured in highway accidents spent in hospitals shows that 51.8 per cent stayed less than a week, 13.7 per cent one day, 33.5 per cent from one to three days and 18.3 per cent from four to seven days, and 17.3 per cent of the patients stayed from one to two weeks. On the other hand, the hospital duration of 13.5 per cent of the highway accident cases was from two weeks to one month, 11 per cent from one month to two months and 6.4 per cent from two months upward.

That highway accidents leave in their wake more than one hospital patient, bed as well as ambulant cases, is indicated by a special study made by one hospital. This study showed that 114 accidents resulted in a total of 251 hospital patients, of which 59 per cent were bed patients and 41 per cent ambulant cases, and that 71 per cent of the 114 accidents resulted in one patient, 22 per cent resulted in from two to five patients and 7 per cent resulted in from nine to twenty-two patients.[1]

A conservative estimate places the number of persons injured in highway accidents that were hospitalized in New Jersey between 10,000 and 11,000 during 1928. The same estimating procedure applied to the number of highway cases hospitalized in the United States, shows that between 200,000 and 250,000 patients were cared

*Paper read at the thirty-first annual convention of the American Hospital Association, Atlantic City, June 17-21, 1929.

[1] The author is indebted to Fred W. Heffinger, superintendent, Mercer Hospital, Trenton; Dr. John G. Martin, superintendent, Hospital of St. Barnabas, Newark and Dr. Joseph F. Londrigan, physician in charge, Rehabilitation Clinic, Jersey City, for valuable suggestions and to Helen E. Heyer of the research staff, Department of Institutions and Agencies, for assistance in the compilation of the data used.

[1] These figures were kindly supplied by Mrs. M. M. Scott, superintendent, Monmouth Memorial Hospital, Long Branch, N. J.

for in general hospitals in the United States as a result of highway accidents in 1928.

While the average amount of the hospital bills rendered to highway accident patients in New Jersey was relatively low, $59.57, the amounts of individual bills ranged from less than $25 to more than $500. Of the bills presented to highway accident patients, 45 per cent of the total was less than $25 in amount, 21 per cent ranged between $25 and $50, 22 per cent, between $50 and $150 and 11 per cent reached $150 or more. The hospital's ability to collect from highway accident patients varied considerably. The amount of hospital bills paid ranged from 22 per cent to 95 per cent of the total amount of the bills, and the amount left unpaid ranged from less than 6 per cent of the total amount of the bills to as high as 78 per cent. The amount of unpaid bills ranged from less than $25 to more than $500.

On the basis of the available figures, it may be safely assumed that the total cost of hospital care for highway accident cases in New Jersey was somewhere between $600,000 and $650,000 last year and that the financial loss to the hospitals amounted to between $250,000 and $300,000. With the New Jersey figures as a basis it may further be estimated that the cost of hospital care for highway accident cases in the whole of the United States amounted to between $15,000,000 and $16,000,000 last year and that the losses to the hospitals were between $6,000,000 and $7,000,000.

Drain on Financial Resources

In essence, accident patients who do not pay for the hospital care received are charity patients and the hospitals are penalized to the extent to which these patients are not paying for their care. It hardly needs to be pointed out that unpaid hospital bills in highway accident cases in most cases are a definite drain on the financial resources of the hospital and that hospital deficits arising out of the care of highway accident cases eventually must be borne by the local community. A question that needs to be given serious consideration is: To what extent should the local community bear the financial burden arising out of the care of highway accidents that happen to occur in the hospital's locality? Figures recently collected seem to show that the financial problems incident to the care of highway accident patients in local general hospitals are only partially a problem for the local community to meet. This survey reveals that a little more than one-half of the total of the 1,781 highway patients that were cared for in New Jersey hospitals came from the hospital city or town. About 38 per cent came from New Jersey outside the hospital community while more than 8 per cent came from twelve other states. It should be noted moreover that in the hospitals located along the main arteries of automobile travel, hospital cases from out of the state number more than one-half of the total highway accident cases handled.

What are the prospects for relief to the hospitals from the financial burden imposed by the nonpayment of bills rendered to highway accident cases? Some hope for a reduction in the number of hospital cases may be held out through safety education campaigns, through the adoption of adequate safety regulations and through the installation of effective safety devices.

Accident Cases Increase

The figures on the number of motor vehicle accidents are not encouraging, however, since the number of such accidents apparently is increasing everywhere. In New Jersey, highway accidents reported in 1928 numbered 18,447, this being 26 per cent greater than the number reported in 1927. Moreover, the owners of motor vehicles are constantly increasing in number. The registration of motor vehicles in the United States reached the twenty-four million mark in 1928, an increase of 1,131,000 registrations over those of the preceding year. The ease with which motor vehicles may be acquired nowadays even by those of comparatively moderate means signifies not only that ever greater numbers will be driving automobiles but that the number which might be classed as financially irresponsible, from the standpoint of compensation in highway accident cases, will be increasingly augmented.

As the adjustment of industrial accident cases at first was a purely individual matter, later to come under complete state regulations in most of the states, so the adjustment of highway accident cases is beginning to receive legal cognizance in a number of states. These states are including in their motor vehicle laws limited or partial compulsory automobile liability insurance features. Maine, for instance, requires compulsory insurance when a driver has been convicted of recklessness or of driving while drunk. In Vermont, a driver who has been responsible for an accident resulting in personal injury or in property damage exceeding $100 must file a certificate showing that all cars owned by him are covered by insurance.

Recently, New York, New Jersey and Rhode Island passed so-called "safety responsible" laws. These laws are framed with a view to curbing reckless drivers, compelling them to bear the cost

of their recklessness and suspending the licenses of those who fail to meet the damages against them. The criticism against these "safety responsible" laws is that some of their most stringent features do not become operative until after a man has shown his disregard for public safety by the criminal operation of his automobile, and that they offer no absolute guarantee of compensation for the victim of an accident.

Massachusetts is the only state that has general compulsory automobile liability insurance. Its law provides that, before a car is registered, its owner must hold either a motor vehicle liability policy or bond protecting him to the amount of $5,000 for the injury of one individual and $10,000 for the injury of more than one individual in a single accident, or that he deposit with the department of public works cash or satisfactory security to the amount of $5,000.

The fact that a state may have an automobile accident liability insurance law offers in itself no guarantee to general hospitals that they will be compensated automatically for their services in highway accident cases. The existing laws contain no mandatory features that the hospital must be reimbursed for the cost of hospital care.

Several states have attempted to meet the situation by giving the hospital the right of lien. At the last session of the New Jersey Legislature, a bill sponsored by the New Jersey Medical Society was introduced "providing a lien for hospitals, physicians and nurses for services rendered in the treatment of injury, accident or illness for which the patient receives compensation."

It has been observed that compulsory automobile insurance laws offer no direct financial guarantees to the hospital. It is significant to note, however, that when the person who is responsible for the accident is insured, the hospital is much more likely to be reimbursed for the care it gives to the victims of the accident.

Small Number Insured

In this connection, the fact should be noted that in only 32 per cent of 314 accidents were the persons responsible for the accident insured and that in 68 per cent they were not insured. The general hospitals may well interest themselves, therefore, concerning whether or not drivers of automobiles carry accident liability insurance. The subject of insurance needs arising out of highway accident cases is being studied by a number of states. The Virginia General Assembly has been most explicit in the direction such studies should take: to determine the advisability of passing laws for compulsory compensation insurance for all automobiles; to work out a schedule of awards of compensation for injuries and to consider the method by which the funds necessary for the operation of such insurance should be administered; to make comparisons of the cost of compulsory compensation insurance by the state, with compulsory compensation insurance by insurance companies and compulsory liability insurance by insurance companies.

An inquiry was directed to more than fifty administrators of general hospitals in New Jersey asking them to describe their experiences with highway accident cases and to give their recommendations for dealing with the hospital problems arising out of the care of highway accident cases.[1] The answers received to this inquiry may be summed up as follows:

Summary of Complaints

1. The majority of the hospitals expressed themselves as having to give an undue amount of free service for highway and other nonindustrial accident cases not properly belonging to the hospital district.

2. All of the hospitals say it is exceedingly difficult if not entirely impossible to collect a large percentage of the bills for highway accident cases. The insurance companies usually pay the injured person who, in turn, leaves the hospital without paying his bill.

3. The majority of hospitals feel that the person responsible for the accident should assume the hospital bill and that if he does not some governmental authority should pay. Surprisingly few hospitals place any responsibility on the patient who is receiving the treatment. The town or county in which the accident occurs, the town or county of the residence of the injured, and the state for nonresidents of the county and of the state are suggested as agencies to assume the financial responsibility for highway accident cases.

4. Compulsory automobile insurance is recommended by nearly every hospital, with the liability insurance to be strictly under state control and each license to carry with it a liability policy. An organization is suggested similar to the Workmen's Compensation Bureau for the adjudication of claims and of the division of available funds to claimants, including the injured person, the hospital, the doctor or any others who have served to rehabilitate him.

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[1] Most of the data used in this paper were taken from a statewide hospital study made by the research division, Department of Institutions and Agencies, for the New Jersey State Commission to Study State and County Aid to General Hospitals, of which Dr. George O'Hanlon, medical director, Jersey City hospital is chairman and Dr. William J. Ellis, commissioner, Institutions and Agencies, a member. Copies of this report may be obtained from the Department of Institutions and Agencies, Trenton, N. J.

The kitchen serves the patients of two hospitals, the medical house staff and the school of nurses.

Modern Nurses' Dormitory Honors Pioneer Southern Nurse

By W. T. SANGER
President, Medical College of Virginia, Richmond, Va.

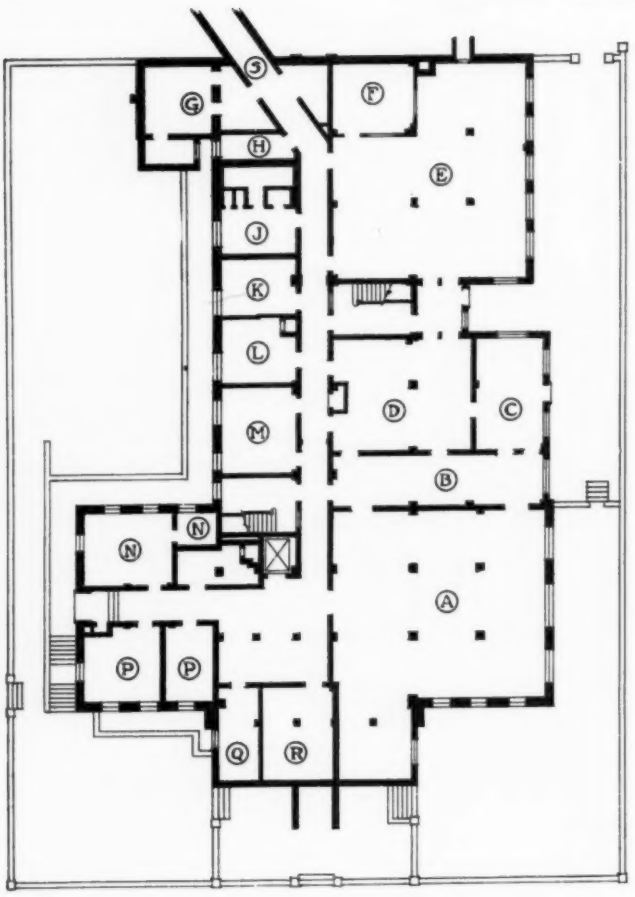
RECENTLY Cabaniss Hall, the nurses' dormitory at the Medical College of Virginia with accommodations for 134 persons, was dedicated. This building is named for Sadie Heath Cabaniss, a pioneer nurse in Virginia and the South who began her epochal work at the Medical College of Virginia.

This building, which shows the influence of northern Italian architecture, is of fire resistive construction and consists of a basement and five stories. It faces south and, because it stands on a lot that slopes to the east, the basement on the lower side of the lot is entirely above ground. This provides full light and air for the dining room, kitchen and pantry, which are in the basement.

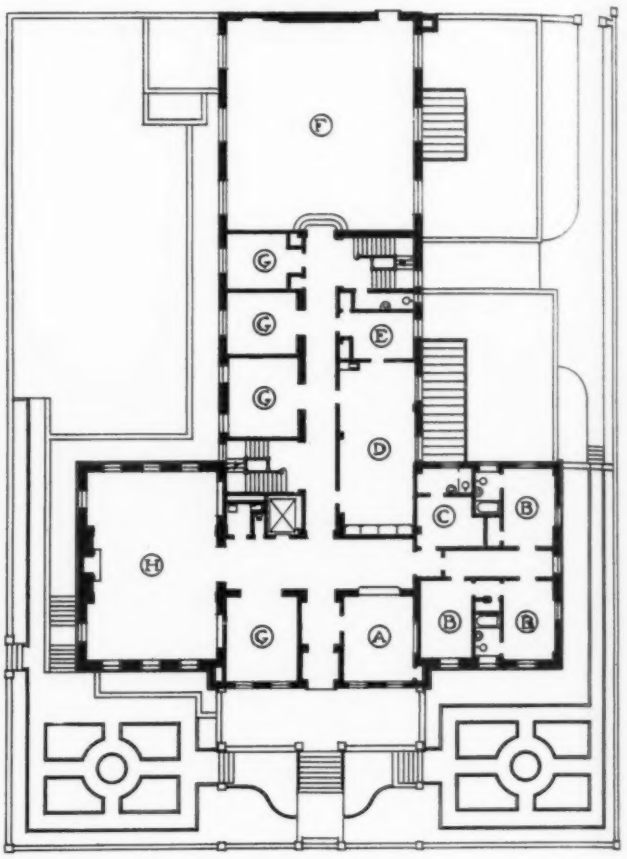
The basement is built of monolithic concrete and the stories above are carried on a steel frame with reinforced concrete floors and roof. The outer walls are built of hollow tile with a four-inch veneer of red brick on the outside. The partitions are formed with brick walls in the basement and gypsum block in the stories above. Pressed steel frames with wood doors are used throughout the building except in the doors that lead to the stairways and elevators. These are of hollow metal.

Already the generous use of tile floors has won unqualified favor. Red tile is used throughout the basement and the four large sun porches, rainbow tile for the first floor corridors and gray quarry tile for the corridors in the upper floors. Oak floors are used in all rooms of the first story. The floors of the bedrooms in the upper stories are of rift grain pine. The building is heated with direct radiation generally placed under the windows and low pressure steam is supplied from the central heating plant.

The instruction room shown in the accompanying plans is used for the teaching of the principles of nursing. A number of classes are held in the lecture room although the major part of the

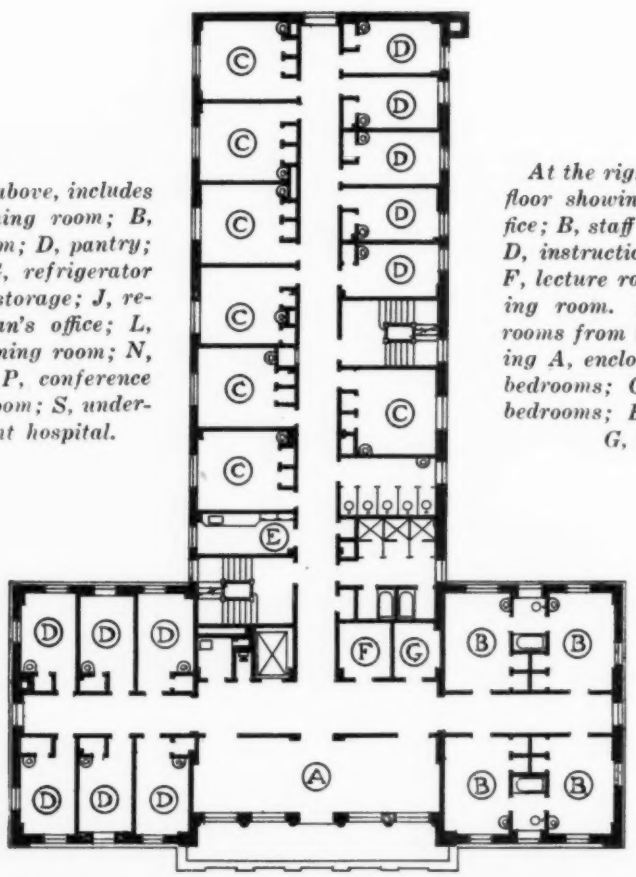


Basement Plan



First Floor Plan

The basement plan, shown above, includes the following rooms: A, dining room; B, cafeteria; C, dishwashing room; D, pantry; E, kitchen; F, storeroom; G, refrigerator machine room; H, vegetable storage; J, refrigeration room; K, dietitian's office; L, soiled linen room; M, staff dining room; N, home economics laboratory; P, conference rooms; Q, laundry; R, storeroom; S, underground passage to adjacent hospital.



At the right above is the plan for the first floor showing the following rooms: A, office; B, staff bedrooms; C, men's coat room; D, instruction room; E, instructor's office; F, lecture room; G, reception room; H, living room. Below is the second plan of rooms from the second to fifth floors, showing A, enclosed porch; B, graduate nurses' bedrooms; C, double bedrooms; D, single bedrooms; E, kitchenette; F, linen room; G, blanket storage room.

A red tile floor sets off the jade green furniture in the nurses' dining room shown above. A heated sun porch, such as is shown below, is provided on each of the four dormitory floors. These porches face the south.

One end of the large living room, equipped with rich furnishings, is shown above.

theoretical instruction of nurses is given in the regular laboratories and lecture rooms of the Medical College of Virginia. The school of nursing of this institution is organized on a college basis, its dean having coordinate rank with the other deans of the institution.

Rooms for members of the staff and graduate nurses are provided on each floor with a bath between each pair of rooms. All bedrooms are equipped with a lavatory with both hot and cold water. General bath and toilet rooms are on each floor, bathrooms having both showers and tubs.

Where two students occupy a room a clothes closet is provided for each. On each dormitory floor are a well equipped kitchenette and a large heated sun porch with casement windows. These porches are attractively furnished in wicker. The building is provided throughout with ample storage space and utility closets. Trunk storage is provided in a specially arranged attic with additional trunk storage in the basement.

Each dormitory floor has a telephone booth. A signal system connected with each bedroom from the central office makes it easy to call an occupant either to the telephone or to the office. The electric elevator is of ample size to carry a stretcher should it be necessary to remove anyone from the building by this method. Ice water is available on each floor.

The first floor is finished in silver gray oak, with attractive paneling in the large living room. The upper floors are finished in walnut. Walnut furniture is used for the most part throughout the building. A special feature of the basement equipment is the large refrigerating and ice making plant which is of sufficient capacity to supply the three hospitals of the Medical College of Virginia with ice.

Cabaniss Hall is connected underground with two nearby hospitals and will be connected in the same manner with a third hospital when that is constructed. This dormitory is so designed that it can be used as a hospital in case of an epidemic.

Standardizing the Hospital School of Dietetics

That hospital schools of dietetics should be standardized to be of greatest benefit to the students who attend them, is the gist of an article on the subject that appears in *Western Hospital and Nurses' Review.*

As a result of the need for training competent hospital dietitians, many hospitals have established schools of dietetics, but until lately little attempt has been made to plan a standard curriculum or to provide for the keeping of permanent records of the students enrolled in them, the article says. In most cases, it continues, the schools are on insecure bases, having been developed by the superintendent and the dietitian without the recognition and approval of the board of trustees.

In California, the state dietetic association and the national association are attempting to establish an outline of study for these schools. They are hoping to make the graduates of dietetic schools not only competent in a technical way but to prepare them for their work both from a practical and institutional point of view.

Hospital Planning—A Study of Its Economic Problems*

By S. S. GOLDWATER, M.D.
Consultant, New York City

GENERAL hospitals in the United States do not, as a rule, admit patients known to be suffering from contagious diseases. In larger communities it is customary to hospitalize contagious cases in special hospitals that have no other functions. In smaller communities patients of this class, unfortunately, are omitted from the local hospital program. A small contagious unit, used only intermittently, is difficult to administer and relatively costly to maintain, and hospitals whose resources are limited are not eager to establish units of this character. Moreover, they console themselves with the thought that the control of contagious diseases, and hence the care of the contagious sick, is a public health function which it is the duty of the government to discharge.

In some localities (New York City, for example), the public health authorities believe that every general hospital should maintain at least a small isolation ward for the care of occasional contagious cases that cannot be prevented from cropping up and that are not suitable for transfer to a central contagious disease hospital. The beds in these small contagious wards are often unoccupied for months at a time, yet the inclusion of this space in the building program is doubtless justified.

Receiving Ward Is "Extra"

Another type of special ward designed for temporary occupancy, which adds to the cost of hospital construction without increasing the normal census of the hospital, is the receiving emergency or observation ward (I use all three terms because often the same ward is utilized for three distinct purposes). As a receiving ward, it is the function of this department to provide a place where the symptoms of all newly admitted patients can be studied sufficiently to determine the proper clinical classification. As an emergency ward, its function is to offer bed space, treatment rooms and the necessary personnel to ensure immediate attention in every sort of emergency—attention that is not always obtainable promptly in wards whose medical and nursing staffs are preoccupied with other functions. As an observation and detention ward, this section of the hospital plays a particularly important rôle in the case of children's hospitals, in providing means for the prompt isolation of contagious suspects and thus protecting the general wards from contamination. As the population of the adult receiving ward is a transient one (its guests often proceeding on the day of their admission to other parts of the hospital), conservative hospital economists do not reckon its beds as part of the normal capacity of the hospital.

Ward Space Requirements

It is generally assumed that the receiving ward of a general hospital should have a capacity equal to one day's admissions. For example, a 500-bed hospital admitting thirty patients daily should have a reception ward containing thirty beds. In actual practice the capacity of the receiving ward is likely to be only one-half or two-thirds of the size that is theoretically desirable. For a children's hospital the observation ward should be considerably larger. The receiving ward requires only a small kitchen and no dining room or solarium for convalescents. On the other hand, it demands a liberal allowance of space for history, examination and treatment rooms.

The space that the modern hospital requires for purely administrative purposes is far from negligible. This is reflected in the hospital budget. As reported by the United Hospital Fund, the total expenditure for the current maintenance of twenty-nine nonmunicipal general hospitals in New York City in 1928, was $16,047,000. Of this sum there were charged against administrative and corporation expenses items amounting to $1,667,000, or more than 10 per cent of the entire amount expended for hospital upkeep. By far the larger part of the amount so charged was paid out in salaries, and as the salaries of hospital office workers are not generous, it may be

*The first part of Doctor Goldwater's article appeared in the August issue of THE MODERN HOSPITAL.

inferred that a numerous office force was maintained. Social service workers are an office group of comparatively recent origin with which the hospital planner must reckon seriously.

In fact, the central offices of hospitals nowadays resemble the busy and populous offices of industrial corporations. The administrative scheme of a large institution often requires the separation of its purely clerical workers into groups occupying separate offices, in which case the allotment of office space must be somewhat increased. The provision of locker and restrooms for office workers is customary and proper.

The comfort of visitors merits, and in current American hospital planning receives, thoughtful consideration. The prospective patient is himself a visitor until the hospital signifies its willingness to accept him as a patient. A pleasant reception room may be the means of creating confidence and of putting the patient in a frame of mind that will lighten the tasks of the hospital staff and improve the patient's chances of recovery. For accompanying relatives, whom it may be necessary to detain for some hours, suitable waiting rooms are also needed, not only large common waiting rooms, but private consultation rooms as well.

Attempts have been made from time to time to establish a fixed formula to express the amount of kitchen space required for a hospital of a given capacity. Thus a colleague declares that "a space about 80 feet long by 40 feet wide (3,200 square feet) will serve about one thousand persons" (this is equivalent to 3.2 square feet per person). I imagine that this figure was obtained from the study of the kitchen of a public hospital in which the food for patients and employees was distributed in bulk from a single central kitchen. Where the preparation of individual patients' trays is treated as a function of the central kitchen, a notable expansion of kitchen territory takes place, and this may or may not be partially counterbalanced by a reduction in the size, or in extreme cases by the complete but dubious omission of serving pantries adjoining the wards.

Kitchen Service in Separate Units

In striking contrast with the standard suggested above is the case of a hospital of about 650 beds that has chosen to arrange its kitchen service in separate units—one for its private patients numbering approximately 250, another for the combined service of its 300 ward patients and the entire hospital personnel, numbering about 700. Supporting these two main kitchens is a special diet kitchen for calculated diets. In the large central private patients' kitchen of this hospital a separate tray is set up for each private patient, a space-demanding service of considerable proportions. From the second large kitchen, the "ward" kitchen, prepared food is distributed in bulk both to the public wards and to the dining room for the nurses, staff and miscellaneous employees. The space allowances for this service, which in my opinion are by no means excessive, are as follows:

Main kitchen (for 1,000 persons) including vegetable preparation, scullery and dishwashing space	4,000 sq. ft.
Private patients' kitchen (for 250) with similar accessories, plus space for the setting up of individual trays	3,600 " "
Special diet kitchen (for a small but variable number of diets individually prepared)	900 " "
Dietitians' offices	500 " "
Food receiving, preparations, grocery storage, refrigerators and cold rooms, butcher shop and dairy preparation and distributing rooms, serving all three kitchens	4,000 " "
Total central kitchen service for a mixed hospital of 650 beds (private, semiprivate and ward patients)	13,000 sq. ft.

It is a not uncommon practice, in the case of very large hospitals, to set up a fourth kitchen in the nurses' home for the exclusive use of the nursing force. This necessitates an additional space allowance for the total kitchen service of the hospital, since the greater the number of kitchens the greater the duplication of accessory service rooms and the less intensive the use of kitchen space and of essential cooking equipment.

Improved service is the only justification for a multiplication of kitchens. On this point there is much to be said. In a treatise published in Germany some years ago, the author argued that the large central kitchen of the typical pavilion hospital, necessarily remote from some of the pavilions, was a barbarous institution, unsuited to the needs of the sick. He maintained that the preparation of food for the sick was an individual problem involving many considerations of a physiologic and psychologic nature, and entered a plea for maximum decentralization of hospital kitchen service with a view to providing good freshly prepared food in individual portions. This line of argument, whatever the force of its logic, will not be welcomed by hospital economists, since it implies that every ward is entitled not merely to a

service pantry, but to a small productive kitchen and a competent cook of its own. No doubt much of the prevailing dissatisfaction over hospital food is due to a lack of sympathy with this fine ideal, but it is my belief that the next decade will witness a distinct movement toward individual care in the preparation of food for hospital patients.

Many years ago, I suggested half seriously that if a perfect hospital were ever built it would be a hospital in which each patient would have a private room, an individual nurse, a private balcony and private garden. With the patient's digestive system in view, I might have added (without disrespect to doctors and dietitians, who are all right as far as they go) that the perfect hospital would provide a private cook for each patient as well—and that the best French cook obtainable would be none too good.

Dining Room Demands Increase

With the multiplication of hospital personnel, dining rooms bulk ever larger and larger in the hospital building program. The location of hospitals and the long hours of hospital service compel most American hospitals to make arrangements for the entire or partial feeding of all, or nearly all, of their workers. For some, three meals a day are provided, for others, one or two meals. It is generally assumed that the capital outlay and current expenditure that this service demands are offset by a reduction in wages, and in most hospitals this is probably true.

About a dozen years ago, a bold experimenter in a Middle Western city undertook to establish a large general hospital without resident nurses or other resident employees. The employees were all expected to provide their own meals. That this experiment, a revolutionary one for this type of hospital in America, did not turn out precisely as expected, may be inferred from the fact that this hospital subsequently built the most sumptuous nurses' residence in the world, with an independent kitchen and a number of attractive dining rooms. Although in this case the experimenter went too far, most hospital administrators are perhaps too ready to assume that all hospital employees must be fed in and by the hospital. Willingness to experiment with modified and substitute schemes for special groups of hospital employees might, in the long run, lead to the elimination of at least a part of this service and to a corresponding reduction in the cost of hospital construction.

It is quite as impossible to make a hard and fast rule concerning the amount of laundry equipment required by a hospital and the necessary space for its installation as it is to establish a space formula for kitchen service. There are wide variations in laundry service. Sheets and pillow cases may be changed twice as often in one hospital as in another. Indeed, an examination of the practice of an individual institution caring for both private and ward patients generally discloses a double standard within the single institution.

Occasionally a hospital whose building funds are limited foregoes the construction and equipment of its own laundry and contracts for this service with an outside commercial establishment. I have seen this choice made in the belief that it was an economical one, but hospital superintendents usually find that the service of a commercial laundry is not sufficiently dependable or flexible to satisfy the hospital's needs, and that the cost of commercial service is apt to be greater, since the commercial laundry pays taxes and is obliged to earn interest on its capital, to set aside a fund for depreciation, to pay higher wages and to earn a profit. The hospital that plans its own laundry carefully and is vigilant in its operation is likely to make the more satisfactory showing.

Laundry Rooms Vary in Size

While, for the reasons already stated, space allowances for laundry purposes vary considerably, 12 to 15 square feet (for laundry, together with receiving, sorting and distributing rooms) for each occupied bed may be set down as a fair average. A considerable part of this space is unoccupied by fixed machinery and is required for purposes of interior circulation and laundry trucks. Laundries will require considerably less space if the modern overhead trolley system for the transfer of material from machine to machine is used. Hospital laundries operate, as a rule, for only eight hours a day, with a single labor force. The use of a double shift of workers has often been suggested but rarely tried; this would materially diminish space and necessary equipment.

Shortage of storeroom space for all departments is a common hospital complaint. The hospital planner should consult the purchasing department about advantages of a plan for the purchase of merchandise in bulk at reduced prices. Storage space cannot be had for nothing, but such space must be paid for only once, whereas the purchase and consumption of costly supplies go on forever.

Hospitals in the United States are, with rare exceptions, obliged to have their own heating plants. For heating purposes steam is commonly, hot water rarely, employed. Yet hot water is known to provide the pleasanter form of heat, and

the consensus of engineers is that hot water plants, while a little more costly to install, are cheaper to operate if conscientiously and intelligently regulated.

An independent power plant is sometimes omitted in order to restrict the building program despite the realization that its omission will, in the long run, add to the cost of operating the hospital. In the United States it is only in especially favored localities that large and moderate sized hospitals find it profitable to buy rather than produce their own power. In the case of small hospitals, the situation is different. Power plant or no power plant, the hospital must employ its own mechanics, and for these, work and repair shops are indispensable.

The interior communications of the hospital afford a fascinating subject for study. In hospital planning, hygienic values, of course, come first. What I have elsewhere set down as the five remaining basic principles of hospital planning, namely, unity, diversity (that is, of form), flexibility, facility of operation, and economy, are all affected by and to a great extent dependent on the manner in which interior lines of communication are developed in the actual planning of a hospital building. Writers who argue about the relative merits of horizontal and vertical communication between wards are not really so much interested in a difference in direction as in the elements of time and space, that is, convenience and cost.

Long Corridors May Impede Work

During a visit in 1912 to a comparatively new Continental pavilion hospital of magnificent size, I was informed by the staff that their work was seriously impeded by the great length of corridors stretching from building to building. Residents were devoting more than an hour and a half daily to interior interdepartmental journeys, and the hospital meanwhile was forced to clean, repair, heat and light a vast unproductive area. Yet this is not quite a full or fair statement of the case, for through their wide separation the wards profited in quiet and in exposure to light and air, which are essential and indispensable hygienic values.

From the standpoint of economy, the shorter the hospital corridor the better, but if corridors are reduced to the vanishing point, the hospital may pay the penalty of a loss of other desirable qualities. If it is true that some of the hospitals of Continental Europe are so spread out that their work is hampered, America, on the other hand, is nowadays too eager to plan hospitals with a view to concentration and with little regard for anything else. For the thoughtful hospital planner, the most significant contrast is not the contrast between hospitals in which the principal lines of communication are respectively vertical and horizontal, but between hospitals in which interdependent departments are conveniently grouped and those in which they are inconveniently grouped, the maintenance of sound hygienic conditions being presupposed in either case.

The vice of overcrowding is unfortunately not limited in America to tenement house and office construction, although I am not arguing for its desirability there, either. There should be, in any hospital, just as much corridor space as may be necessary for purposes of communication, plus such additional increment as may be required to preserve essential hygienic conditions.

Elevator Efficiency Increases

In tall American hospital buildings, stairways are not much used and therefore they are usually limited in number and size to the minimum requirements of the local building and fire laws. As the speed, control and general effectiveness of elevators increase, the number of elevators required in large hospitals should diminish. If this actually happens, space will be gained, but it does not follow that money will be saved, for the cost of installing each elevator, with its superior equipment, will rise. Deficient elevator service is a familiar complaint in American hospitals. It is, however, a complaint for which time will effect a cure, for this is a phase of hospital construction and equipment in which hospital administrators are now deeply interested.

In well planned hospitals, there are always sections in the building on which reliance may safely be placed on natural ventilation, but in most hospitals there are also sections where, in the absence of mechanical aids to ventilation, annoying conditions cannot be avoided. Ventilating ducts are expensive, especially if they must be flushed by electrically driven fans rather than by gravity, and the skill of hospital architects can nowhere be applied to greater advantage than in the development of hospital plans that render mechanical ventilation almost, if not quite, superfluous.

In this field, the practical knowledge of the hospital administrator should be joined to the scientific knowledge of the ventilating engineer. In the United States, where resident hospital engineers seem to have an ingrained dislike for ventilating apparatus, it is wise not to place too much dependence upon such apparatus, for where the conditions are such that the use of a ventilating fan is optional, the chances are that it will not be used at all. It is certainly true that interior spaces, devoid of windows, can be amply supplied with fresh air by mechanical means. Indeed, by the use of air

conditioning apparatus, such spaces can be made comfortable both in summer and winter. But a workroom into which no sunlight penetrates is unattractive, no matter how thoroughly it may be ventilated, and the hospital which has few inside rooms and therefore requires but little ventilating duct space, is to be preferred to one that requires a great network of space-consuming ducts.

It will suffice to refer in the briefest terms to three categories of concealed spaces, minor in area but important in other respects, that are introduced into hospital building for practical purposes. In the first category are pipe spaces, where all manner of pipes, such as brine lines, hot and cold water pipes, and steam supply and return systems, are, for esthetic reasons, hidden from view, but which, nevertheless, in carefully planned buildings, are made accessible for necessary repairs. Most of these spaces are vertical channels between interior partitions. Horizontal spaces between ceilings and floors may also serve as pipe spaces, but where such spaces are introduced in considerable volume it is usually for the purpose of obtaining smoothly finished ceilings without projecting beams or, in some instances, for the purpose of obstructing the passage of sound from story to story—a practical aim that may prompt the hospital architect to introduce otherwise useless space between vertical partitions as well.

One more subject may properly be mentioned before closing the discussion of elements in hospital construction that have administrative significance, and that influence materially the cost of building. I refer to the deliberate expenditure of money to meet a future rather than a present need.

Flexibility Essential to Planning

Flexibility is a recognized characteristic of sound hospital planning. I have already referred to it as one of six basic principles. Occasionally circumstances may favor the formulation of a plan that will permit the expansion of any part of the hospital at need, without the costly rebuilding of original structures. But this is not always possible, however evident its desirability.

In this connection, I cite the example of two neighboring hospitals now under construction. Each hospital serves a rapidly growing community, yet each proposes to erect at the moment only a sufficient number of beds to meet immediate requirements. The architects in both instances have carefully considered the question of a future increase not alone in the number of ward beds but also in the various service departments. In one case, the character of the site and other conditions as well, favored a plan of the utmost flexibility, so that while the operating rooms, kitchens, x-ray department, laboratories and administrative and living quarters in this plan are only large enough to meet immediate requirements, additions to any or all of these sections can easily be made in the future without great expense. In the other case, the architectural problem was a far more difficult one, and it was deemed advisable at the outset to expand the more important service departments beyond immediate requirements. At the moment, therefore, this hospital is spending what seems to be an inordinately large sum of money for a hospital of relatively limited capacity, but is placing itself in a position to adjust itself easily to anticipated future needs.

I realize that there are many gaps in the foregoing discussion of the elements that determine the volume and cost of hospital structures, but in order to save time I shall now proceed to the consideration of another important aspect of hospital planning.

Effecting Cures With Little Cost

Satisfactory hospital treatment, from the patient's standpoint, is that which effects a cure. A cure that is obtained by methods that are unnecessarily burdensome is, however, not acceptable from the standpoint of hospital administration or of medical efficiency, which demands a cure with the least possible expenditure of labor and material. How can hospital planning aid in accomplishing this?

Certainly, every hospital plan should conform to sound hygienic principles. A book on hospital planning which appeared some years ago expressed this need in its title—"Healthy Hospitals." There are illnesses in which treatment is chiefly if not wholly "expectant," the chief curative agents being rest, food and wholesome surroundings, two of which the "healthy hospital" itself provides without the active intervention of the physician. These same agents, moreover, are powerful allies in those cases in which active treatment is of primary importance. Although hygienic principles are everywhere the same, their application calls for hospital planning of one kind in cold countries, another in the tropics, for in the one case the direct rays of the sun are a blessing, in the other an evil to be guarded against.

Hospital hygiene has been discussed extensively in the hospital literature, and as I have no new theory to advance, nothing would be gained by a lengthy discussion of the subject here. I pause only to remark that the advantages of sun exposure (in the temperate zone), of ample air space

and of free ventilation are generally conceded, and that it is the duty of the hospital planner to conserve these and all other values that contribute to the health and welfare of hospital patients. Quiet surroundings, solariums, open air porches, accessible outdoor spaces on the roof or on the ground, and separation or quiet rooms in suitable numbers (a study of actual patients showed that 15 per cent of the patients ordinarily found in a general hospital ward require separation from the general run of patients either for their own good or for the benefit of their neighbors) are favorable factors, to the extent that they hasten recovery and lighten the labor of the physician, thus contributing to medical efficiency.

Must Know Technical Requirements

That there must be appropriate equipment for the diagnostic and therapeutic purposes of the physicians in charge, and suitable space for the installation of such equipment, goes without saying. The hospital planner must therefore not only familiarize himself with every technical requirement of every branch of the service, but he should acquire so intimate a knowledge of the nature and value of technical procedures that he will be able to apportion and to arrange space and equipment in the most advantageous way.

In the location of clinical departments and of other divisions of the hospital, the actual circumstances of hospital work and not the personal preferences of department heads should govern. Motion studies would accomplish wonders for medical efficiency through improved hospital planning. The consultant whose services are in constant demand but whose hospital station is far off, will not collaborate effectually. The frequency of the pathologist's participation in bedside conferences is not increased by placing the laboratory in a building remote from the wards. Clinicians who value the services of the chief radiologist and are eager to confer with him in their wards or in the operating room are not always ready to make concessions to the x-ray department with respect to desirable and convenient working space. The patient who must be carried to and from a distant operating room, x-ray room or laboratory, is not often benefited by the journey. The sterility of a surgical instrument is not enhanced by its prolonged exposure to contamination after it is taken from the sterilizer.

It is of the utmost importance that examining rooms should be sufficient in number, convenient in location and suitable in arangement. How often is the folly committed of locating the medical departments of dispensaries in proximity to noisy streets, thus interfering with the accuracy and reliability of clinical examinations. One of the greatest clinicians of our day taught physical diagnosis in a huge barnlike room in which a dozen patients and a score of doctors and nurses were assembled at the same time. We may admire the extraordinary power that enabled a genius to distinguish faint heart and lung sounds under such conditions, but those who plan clinics to-day must endeavor to provide better conditions for ordinary men.

Working and living conditions in the hospital should be such as to maintain the health and vigor of the staff. The promise of a decent rest room in the vicinity of the operating room is a boon to the surgeon who for years has been compelled to work without that reasonable comfort. Facilities for the recreation of the resident or house staff have a bearing on medical efficiency that it is unwise for the hospital architect to ignore. X-ray departments and laboratories in many hospitals are still waiting to be rescued from insalubrious quarters.

These, in brief, are aspects of hospital planning that play a conspicuous part in enhancing or diminishing medical efficiency. As to these factors, there can be little difference of opinion. But there is another way, not so generally accepted, in which hospital planning can contribute to medical efficiency, and this is perhaps the most important of all. I refer to the grouping of clinical departments within the same structure (or in structures closely connected with each other) in such a manner as to promise the fullest and freest use of medical talent and the most facile utilization of resources of various complementary branches of medicine.

Plan for Efficient Practice

I expressed, I believe, a commonly accepted opinion when recently I remarked that "specialism, which in its sphere has served and continues to serve a highly useful purpose, has split the forces of medicine into numerous small bodies which, valuable as they may be for skirmishing purposes and in certain critical emergencies, are powerless to act as an effective unit in the endless struggle against disease," and that "this distressing fact prompts the question whether anything can be done by means of hospital organization to promote the training of specialists under conditions that will conserve and develop in them what is soundest and most useful, while checking the growth of eccentricities that arise out of their professional isolation." If for the words "hospital organization" we substitute "hospital planning," we find ourselves facing the problem of finding the best structural arrangement for the

efficient practice of medicine under modern hospital conditions. Upon this subject I take the liberty of repeating views previously expressed which I still believe to be valid.

"One method of attempting to solve the problem (that is, of efficient medical practice under modern hospital conditions) is to bring together in a single locality, a large number of highly developed specialized institutions, each of considerable size. Another is to find a place for recognized medical and surgical specialties within the framework of a general hospital just large enough to accommodate all the clinical branches that have earned the right to recognition, but no larger. In a general hospital of 500 or 600 classified beds, there can be provided for each of the various medical and surgical specialties a sufficient number of beds to afford to each specialist the volume of clinical material that is necessary for group study, for related laboratory research and for specialized medical training. If the total number of beds is increased to several thousand, the result is that closely related hospital departments become instead mammoth specialized institutions, whose heads cannot easily avoid becoming absorbed in time-consuming administrative problems and distracting duties that lead away from the actual practice of clinical and scientific medicine. In the properly proportioned general hospital this handicap is avoided by restricting the size of each special department.

General Hospital Best for General Practice

"While there are certain advantages in assembling in a single locality a number of highly specialized institutions, each of considerable size, the practicability of actual clinical cooperation between such institutions in the treatment of an individual patient is, it seems to me, far less than in the case of a general hospital of moderate size in which the very nature of the construction and arrangement of the buildings brings into intimate daily contact the men who head the several departmental services.

"Briefly, then, I believe that medicine can be practiced most effectually in a general hospital which, on the one hand, should not be too small to accommodate the various specialties, but which, on the other, should not be so large as to use up the time and strength of the specialist, either in an unwieldy clinical service or in administrative problems, or to necessitate the awkward physical separation of clinical departments from each other, thus making intimate cooperation impossible, and, indeed, making any cooperation whatever workable only through the use of cumbersome administrative machinery. I question whether the largest so-called medical centers do not by their stupendous size and the very terms of their organization, tend to perpetuate rather than relieve or abolish the faults of specialization. If they do, those who are engaged in hospital planning are under a moral obligation to exert their influence in favor of the establishment of general hospitals of moderate size as the most suitable and effective instruments for the enhancement of medical efficiency."

Elements Determining Construction

The principal elements that determine the size, mass and cost of a hospital building and that reflect principles and practices that are of administrative significance, are:

1. The proportion of private, semiprivate and ward beds.
2. The space allowance for each bed or each patient.
3. Actual and relative number and size of accessory spaces included in the ward or nursing unit, such as toilets, baths, ward kitchen, nurses' station, utility and storage rooms, examining, treatment and consulting rooms, ward laboratory, patients' dining room, solariums, balconies, rooms for visitors, and width, length and enclosure (or exposure) of connecting spaces or corridors.
4. The amount of space, outside of the ward unit and nursing station, assigned to diagnostic and therapeutic purposes, clinical recording and medical teaching. In this category are the outpatient department, pharmacy, operating rooms, biological, chemical and pathological laboratories, the departments of radiology, physiotherapy, dentistry, metabolism, cardiography and clinical photography, clinical record room, medical library, lecture and demonstration room.
5. Teaching and other facilities for the school of nursing.
6. Housing of hospital personnel (other than nurses), including executive officers, medical staff and domestic and other employees.
7. The provision of duplicate ward beds which do not add to the normal census of the hospital, such as receiving and emergency wards temporarily occupied, and emergency contagious units intermittently used.
8. Administrative offices.
9. Public waiting and reception rooms.
10. The culinary service (kitchens, accessory spaces devoted to food storage, preparation and distribution, and dining rooms for the hospital personnel and occasionally for visitors).
11. Laundry, linen and sewing rooms.
12. Central storerooms.
13. Power and heating plant.
14. Mechanical workshops and repair shops.

15. Spaces devoted to interior communication and circulation, including corridors, stairways and elevator shafts.

16. Ventilating ducts.

17. Spaces between floors and ceilings, or between the interior partitions, added to afford access to pipes, or for esthetic or sound deadening purposes.

18. Expansion of various service departments beyond the immediate requirements of the existing hospital, in order to facilitate the growth of the hospital in bed capacity without the troublesome reconstruction of key buildings.

Intimate Study Needed

It is from the intimate study of these elements, their functions, their proportions and their relations, that hospital planning must derive its rules of practice. To express the absolute and the relative value of each part of a hospital structure in terms of service to the patient is a task which, so far as I am aware, no hospital economist has thus far attempted in mathematical form, although the literature abounds in practical suggestions for the formulation of hospital building programs. The difficulty of the suggested task is intensified by the fact that, while certain parts of the hospital are directly connected with the patient's comfort or contribute to the patient's treatment in ways that may be readily defined, the relationship of other parts of the hospital building to the patient is remote.

Hospital planning can contribute substantially to medical efficiency by respecting the principles of hygiene in the arrangement of wards, by bringing into close physical relationship departments that are interdependent, by making adequate provision for serviceable technical equipment and by establishing sound working and living conditions for both the resident and the nonresident medical staff. The greatest single contribution the hospital planner can make to medical efficiency is to foster the development of general hospitals composed of all the clinical and laboratory departments that are logically related to each other.

The most effective cooperation of interdependent clinical departments is attained in general hospitals of moderate size. A comprehensive clinical organization is almost impossible in a small hospital, nor can such an organization attain maximum efficiency when it is composed of clinical departments each of which is so large that the energies of the staff are completely absorbed in internal departmental functions to the detriment of those interdepartmental activities that alone can supply the deficiencies and correct the eccentricities of unrestrained specialism.

General Hospitals and the Treatment of Tuberculosis

That there is no valid reason why tuberculous patients cannot be treated in a general hospital, is the belief of Dr. Philip King Brown whose paper, "Tuberculosis in a General Hospital," recently appeared in *California and Western Medicine*.

"Every hospital must be fully equipped to fight tuberculosis in all its phases," Doctor King writes. "The treatment of tuberculosis to-day is a question of accurate diagnosis, supported by the best of x-ray studies, by a complete history and a physical investigation. A survey of the social and economic problems is also in order. All of these aids to diagnosis and progress are available in general hospitals.

"The care of the tuberculous is a specialty and the public has a right to expect every large hospital to furnish the best available advice in every field of medicine. When no provision is made for the diagnosis of tuberculosis, regrettable mistakes are often made."

Doctor King points out that a greater familiarity on the part of the profession generally with various forms of tuberculosis and their modern treatment will be invaluable to the great mass of people and will end in much earlier diagnosis. He also believes that too much emphasis has been placed on climatic and tuberculin therapy. The absolute neglect of diagnosis and treatment of the disease in the general hospital is the great weakness of present organized efforts, he says. Plenty of beds are available in most places for lung cases and good care is provided when once the patients are in these beds, but insufficient attention is being paid to getting them there during the incipient stage when complete cure is most possible.

He concludes: "Follow-up of cases is not sufficient. Teaching about tuberculosis in our medical schools needs improvement."

Hospitals and the Maternal Death Rate

That the maternal death rate in the United States, statistically at least, is higher than that of any civilized nation, was pointed out by Dr. Matthias Nicoll, Jr., commissioner of health, State of New York, in a paper presented at the American Hospital Association convention in Atlantic City.

"Many of those who are seeking to solve this problem strongly advocate the hospitalization of maternity cases whenever facilities are available," he said. "Theoretically at least such advice would seem to be logical, and there can be no question but that it is being followed increasingly year by year. Yet when one comes to study the results of hospitalized cases, even with consideration of the fact that they include a disproportionate number of complications compared with those cared for in their homes, there would seem to be a growing need for the careful study of the equipment and methods of obstetrical service in such hospitals, as well as the qualifications of the obstetricians.

"This is logically the task, duty and responsibility of the organized medical profession and will involve courage, independence and not too great subservience to that much abused term, 'medical ethics.'"

Niagara Falls Memorial Hospital Owes Additions to Citizens' Aid

By P. GODFREY SAVAGE
Superintendent, Niagara Falls Memorial Hospital, Niagara Falls, N. Y.

A NEW surgical and administration building and an addition to the nurses' home were opened at the Niagara Falls Memorial Hospital, November 1, 1928. These new buildings effect an increase of 50 per cent in the number of hospital beds and nearly 100 per cent in the available rooms in the nurses' home.

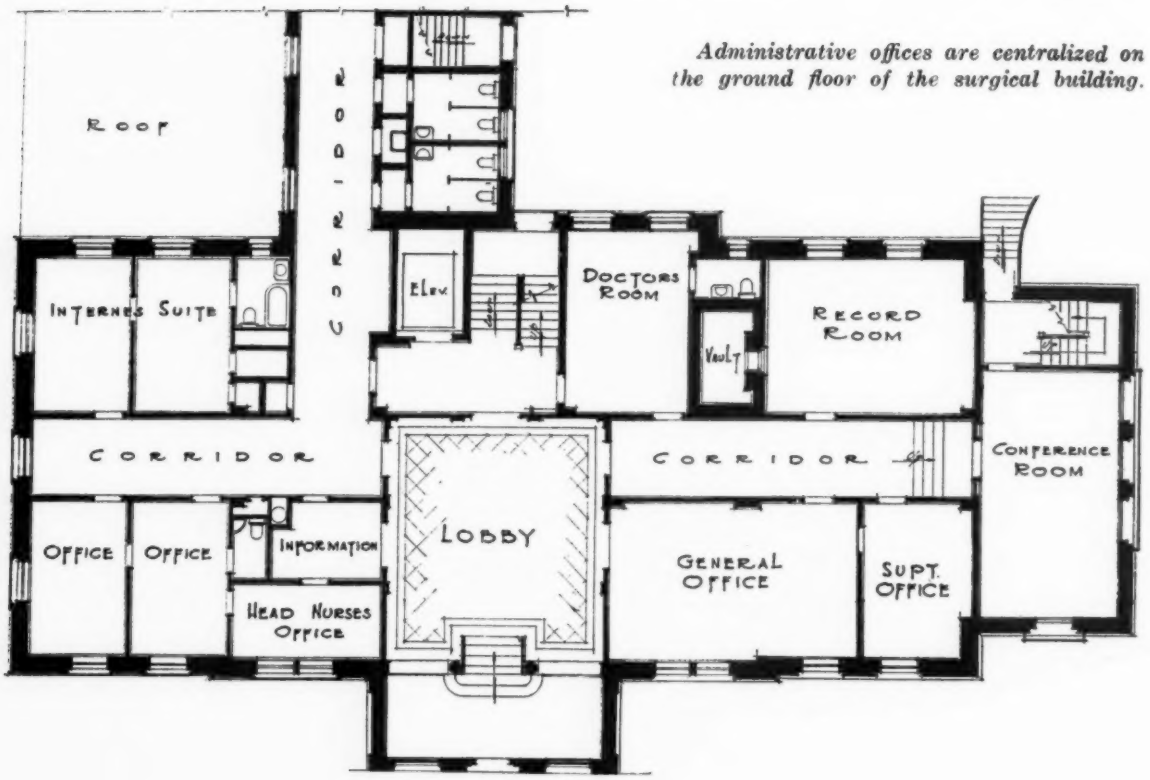
The hospital is in the center of the city of Niagara Falls and occupies a large city block. The population of the city is 70,000, but because of the large number of visitors during the summer the population that the hospital serves is often increased to 100,000. There are approximately 400 hospital beds in the city, of which 185 are supplied by the Niagara Falls Memorial Hospital.

The new surgical building is a six-story structure with a modern operating suite on the top floor. Different types of lighting have been used in the operating rooms to meet the preferences of the surgeons. The walls are of cement, painted a neutral gray. The floors are small tiles with carborundum nonslip inserts. The floors of other areas are covered with gray battleship linoleum. Electrically heated autoclaves are used for all sterilizing and electrical equipment has been used wherever possible. A micro-drive electric elevator is giving great satisfaction.

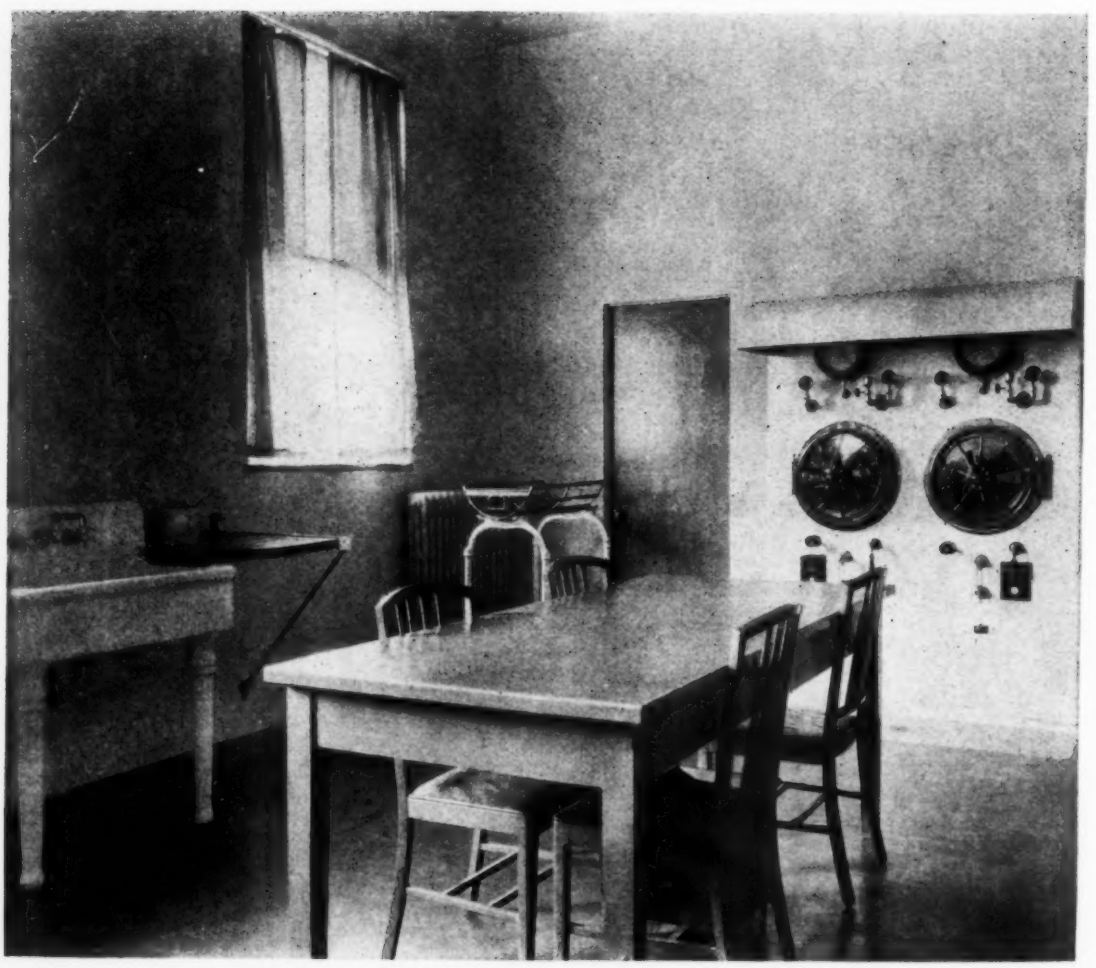
The fourth and third floors are made up of private and semiprivate rooms. Steel furniture has been used generally and all the beds are equipped with adjustable springs and irrigating bars. Each room has a private toilet. Electric fans have been permanently installed. The bedside chairs are of aluminum and finished in the color scheme of the suite they occupy. Private rooms are decorated in apple green and semiprivate rooms in blue.

Each floor is equipped with a utility room that

The fireplace adds an attractive note to the reception room in the Niagara Falls Memorial Hospital.

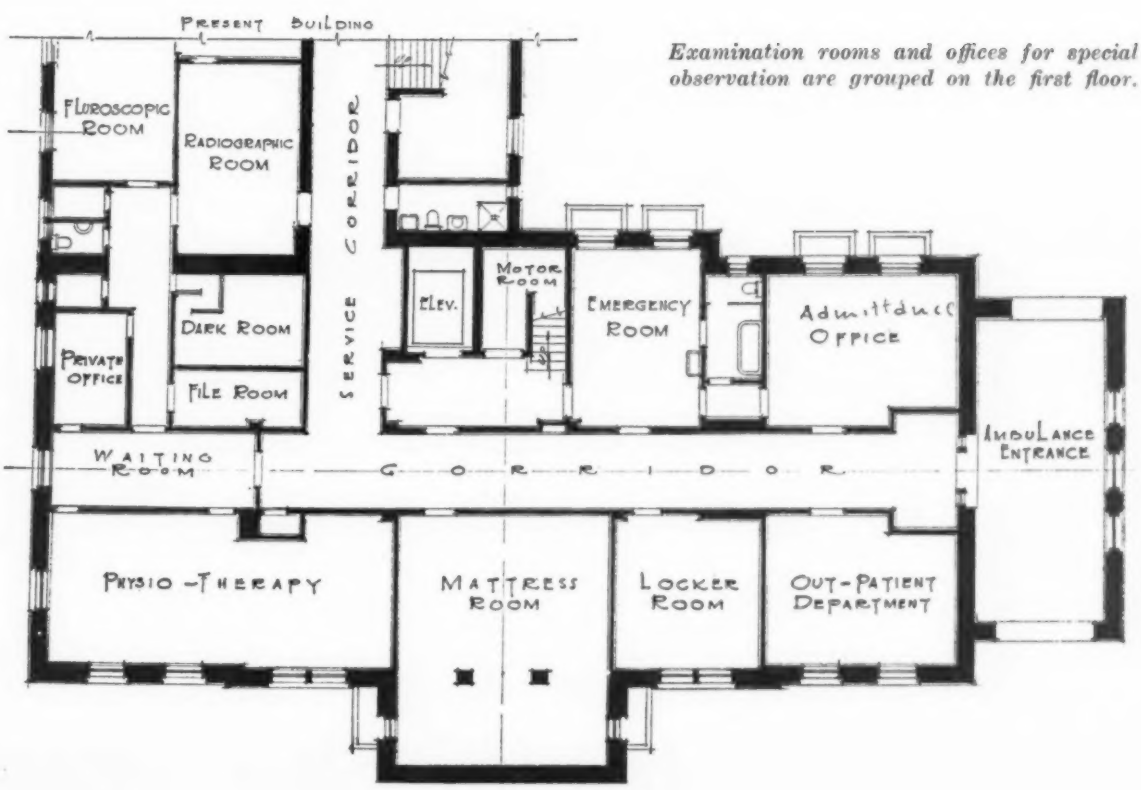


Administrative offices are centralized on the ground floor of the surgical building.

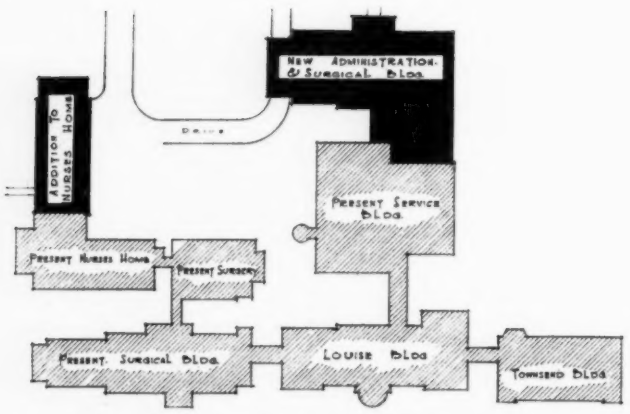


Nurses' work room, on the top floor, for the preparation of sterile dressings.

At the right is one of the private rooms, decorated in cool apple green.



Examination rooms and offices for special observation are grouped on the first floor.



The hospital buildings occupy an entire block.

has utensil and instrument sterilizers, a bedpan washer and other facilities. The elevator, stairway and food service room are separated from the main corridor. The food service room is equipped with refrigerators connected with a circulating brine system, electric stoves, electric food carts, an electric dish washer and steel shelving.

The floors are covered with gray linoleum and the doors are a rubbed grain with a gray finish. The walls are of an ivory color with a steel base painted to match the floor.

Surgical Ward for Acute Cases

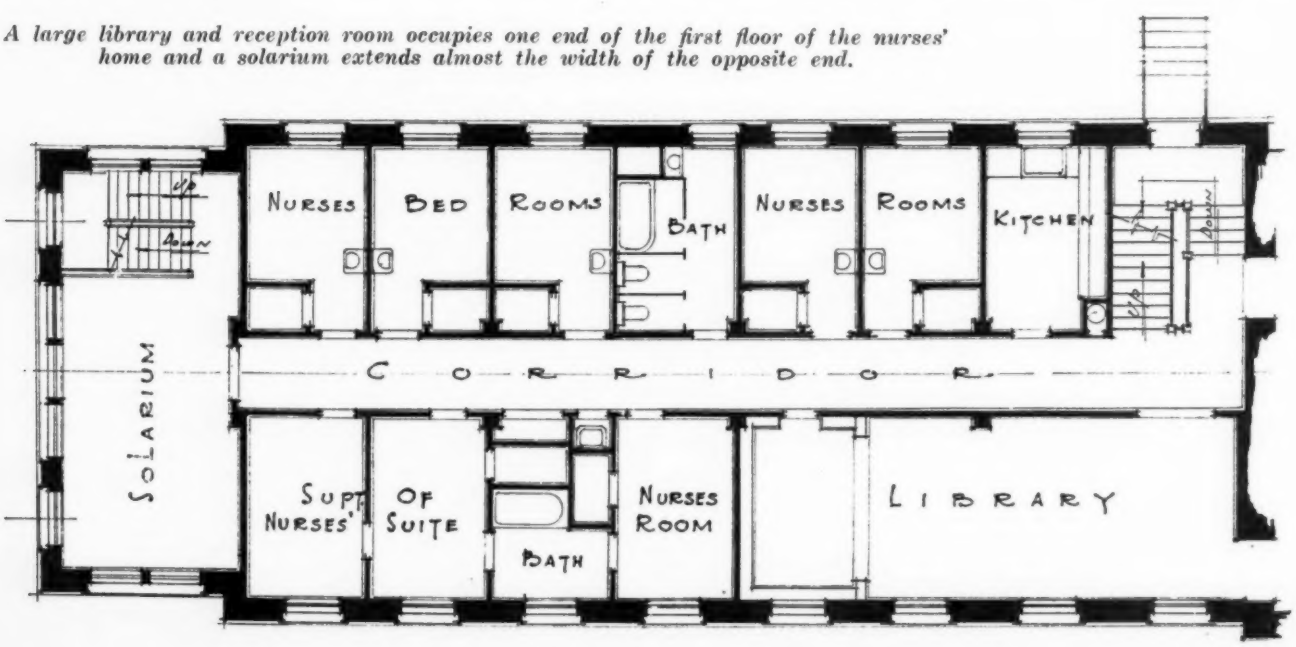
The second floor is divided into rooms of four beds each and constitutes the surgical ward service for acute cases. Between each two rooms is a small toilet and utility room to service the eight patients and to reduce the travel for nurses. A warm gray color characterizes the furniture. Combination bedside tables with serving trays have been used to reduce the number of pieces in the room. Overhead rails with curtains provide privacy when it is required or desired. All floors are provided with sun rooms and the doors are wide enough to move the beds into these solariums. Barrier doors with washable panels to provide privacy and secure cross ventilation have been placed where there are patients.

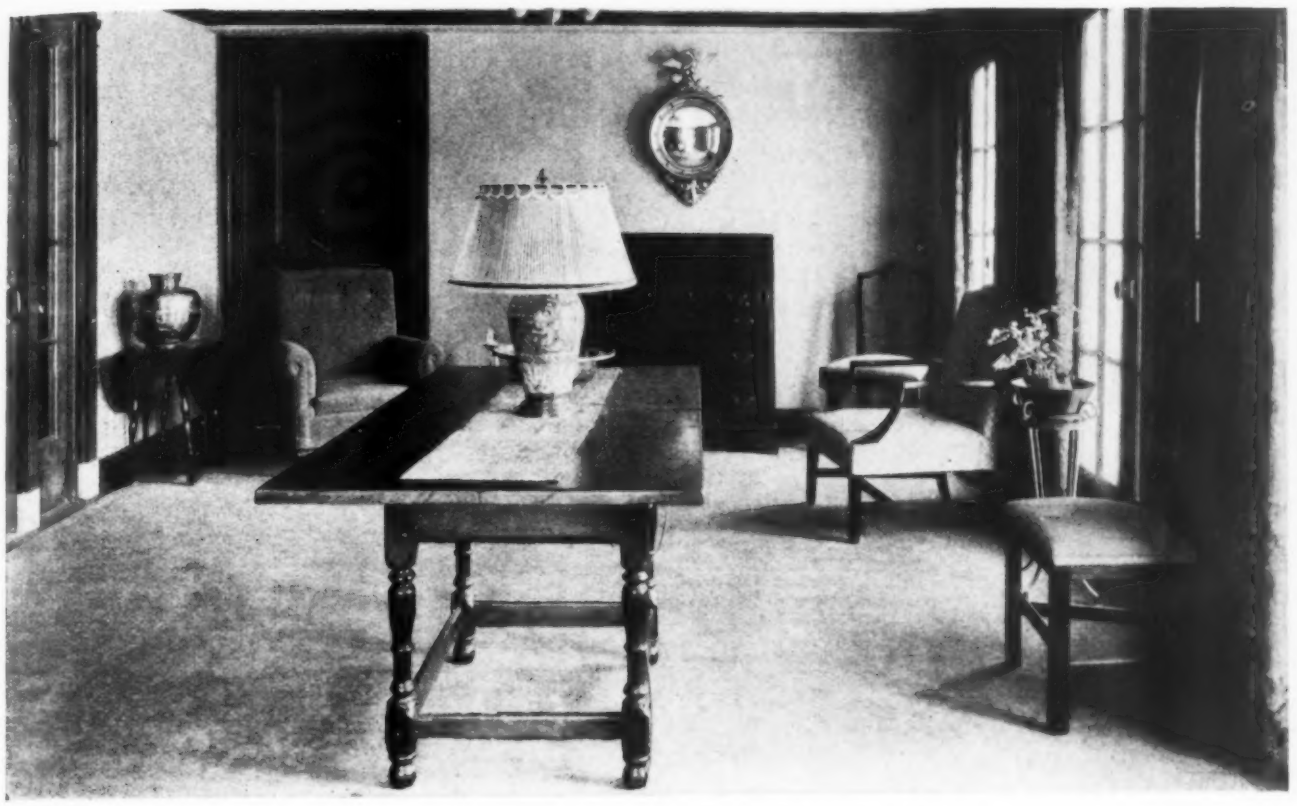
Administrative Offices Are Centralized

The first floor is used for administrative purposes and all the offices are centralized here and on the ground floor. The large entrance lobby is attractive, with the "hospital atmosphere" reduced to a minimum for the visitor. The cream colored walls are paneled. The floor is white and yellow terrazzo and the steps and lower section of the entrance are of Tennessee marble. The furnishings and hangings are in a warm apricot, and genuine period console tables and mirrors add to the tasteful effect of the ensemble. Side wall brackets with yellow lights are colorfully harmonious in the evening. On one side of the lobby is the information desk and on the other the general office. Other doors lead into the hospital areas.

A physicians' reception room, an interns' suite, offices for the nursing department, the library and records room, the superintendent's office and the conference room are provided on this floor. The arrangement is convenient and allows effective control. The conference room is above the entrance for patients and beneath the sun rooms. It has been furnished in exquisite taste, early American furniture having been used with striking results. From this floor and building a corridor leads to the other sections of the hospital.

A large library and reception room occupies one end of the first floor of the nurses' home and a solarium extends almost the width of the opposite end.





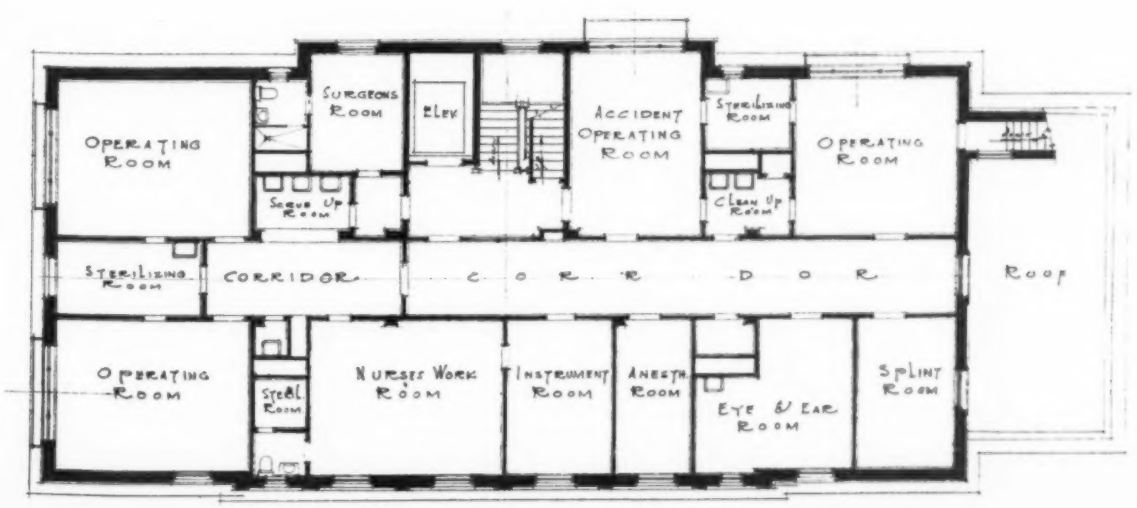
Conference room in the new surgical and administrative building.

Here public toilets and telephones have been placed.

On the ground floor an admitting office, emergency rooms, a waiting room and a locker room are near the entrance. Patients from ambulances and automobiles may be removed at the grade and carried on stretchers or wheel chairs or helped into the hospital. A green mastic flooring has been used with pleasing results. With the walls and doors finished the same as those on the other floors, there is no feeling of being in a basement area. The x-ray laboratories are also on this level. They are partly within the building and extend partly beyond, an arrangement that allows plenty of overhead ventilation and light. The physiotherapy department adjoins the x-ray department.

The addition to the nurses' home makes a splendid improvement to the property. It adjoins the older part, and the construction has been carried out to make the entire structure consistent in architectural details. Most of the rooms face south and west.

On the ground floor a large auditorium with a stage and refreshment room makes a suitable recreation space. The entrance is here as are also



Operating rooms are found on the top floor of the new surgical building.

a matron's office and a stairway that leads to the floors above. The library is on the first floor. Adjoining this are the reception room and the study rooms in the older part. The suite for the superintendent of nurses is on this floor as are also a few rooms for student nurses. At the end of the corridor and on the floors above are large attractive sun rooms. A kitchen with electrical equipment is near the reception room, providing convenient and pleasant service when the students or instructors entertain.

The second and third floors are used entirely for nurses' rooms. The rooms are small but consistent with good design. Steel furniture has been used and each room has a washbowl. All rooms are single, and individual needs have been given full consideration. The walls are finished in rough plaster, sand colored, and the wood trimming is in natural walnut. The floors are covered with brown linoleum. Red quarry has been used in the entrance and in the sun rooms.

These two buildings, including the necessary equipment and the grading of the grounds, represent a total expenditure of about $425,000. The new quarters provide for sixty patients and thirty nurses. An entirely new operative suite with four large operating rooms and two special operating rooms has been established. The administrative offices have been relocated and a fully equipped modern x-ray department has been installed. Recreation space and added comforts have been provided for the nurses and many new sun rooms are available.

Citizens of Niagara Falls, the industries of the city and interested persons outside have provided the funds for this development and the result appears to justify the confidence they have placed in the institution.

Applying Business Methods to Hospital Management

The duty of every hospital, large or small, to develop an adequate system of accounting and office procedure has been made the basis of a study at the University of Michigan Hospital, Ann Arbor, and the results have been presented in a booklet on the problems of hospital management by Albert E. Sawyer, office manager, University of Michigan Hospital.

Mr. Sawyer summarizes his study as follows:

1. The hospital, whether large or small, can better serve its community if it is managed in accordance with the principles that govern the successful business enterprise.

2. The absence of the profit motive in the hospital enterprise should tend to increase the incentive for sound business management.

3. A carefully planned accounting system is the most useful and necessary tool in the proper management of the modern hospital. The value of such a system is not confined to the large hospital but will be found equally helpful and worth while in the management of the small institution.

4. The most valuable accounting system for the up-to-date hospital is the one that is so planned as to indicate promptly and in an understandable way, the facts that require executive adjustment and control.

5. Blanket appropriations for operating expenses of the hospital tend to stultify business initiative. The income of the hospital should not be applied in a manner that distorts the true relationship between the earnings of the hospital and the cost of rendering the services to patients.

New South Wales Hospitals Face Shortage of Student Doctors

At the present rate several hospitals in New South Wales, Australia, will be inadequately staffed within the next two years, according to an item appearing in the *Prince Alfred Hospital Gazette*.

The decline in registrations in the University Medical School within the last few years has been marked. New South Wales in 1923 had a population of 2,211,106. Doctors registered in the university in that year numbered 197. The population for 1928 was 2,424,654, and the doctors registered numbered ninety-five. It is estimated that there are 3,092 qualified practitioners in New South Wales, apparently the "saturation point" for the medical profession in that state.

At present most of the young doctors who graduate are absorbed by the Royal Prince Alfred and Sydney Hospitals. However, the problem confronting other hospitals of the state is that they will be inadequately staffed if the present rate continues.

Hospitals Are Urged to Provide Physiotherapy Departments

One of the problems that is preventing physical therapy from taking its proper place as a corollary to medicine and surgery is the comparative slowness with which hospitals and medical teaching institutions are providing acceptable physical therapy departments, an article in the *Long Island Medical Journal* points out.

"Every general hospital should have such a department, no matter how modest," the article says, "because if properly manned and used it will benefit a wide range of medical, surgical and other conditions. The main consideration in establishing a department is that a well grounded physician should be put in charge and he in turn provide well trained medical and technical assistants. The initial cost ought not to be more than $2,000 to $3,000, and as to running expenses experience has proved that in many instances the department not only pays for itself but actually produces extra revenue. Patients are willing to pay for treatments from which they see immediate benefits.

"A properly equipped and operated physical therapy department will serve also as an educational center for other members of the staff and for the training of technicians and nurses, and incidentally furnish the means for clinical research."

Making Nitrocellulose X-Ray Film Storage Safe

By CLYDE M. WOOD, Assoc. M., A. S. C. E.
Fire Protection Engineer, Cleveland, Ohio

THE Cleveland Clinic disaster, in which 128 persons lost their lives, has prompted much thought and some action toward preventing a reoccurrence of such a catastrophe.

There are two fundamental facts to remember in handling and storing films.

First, x-ray film is inherently dangerous to life and property.

Second, x-ray film can be stored and protected so as practically to eliminate danger to life and property.

The regulations of the National Board of Fire Underwriters as recommended by the National Fire Protection Association contain the essential information for safeguarding x-ray film storage and most of the data in this article have been taken from these regulations. Nothing in this article is intended to conflict with any insurance regulations or building codes, the intention being rather to supplement and help in their interpretation.

To assist in making a practical start in actual construction and protection of an x-ray film vault, this article is written for the benefit of hospital consultants, hospital administrators, physicians, architects, mechanical engineers, contractors and fire insurance agents and brokers.

Need for Special Treatment

Let us analyze briefly the reasons for the need of special treatment for x-ray film storage and protection:—

Nitrocellulose x-ray film is easily ignited, burns with extreme rapidity and with great heat, and generates large volumes of fatal gases. Relatively, film burns faster and hotter and is more poisonous than most of the materials with which the average person is familiar. Only those who have actually seen a film fire can realize its ferocity—and the stubbornness with which it resists extinguishment.

First, any material that ignites so easily, and burns so fast and with so much heat, should be segregated in a fire resistive enclosure or vault. Where? Out of doors? On the roof? The vault should be placed as near as practicable to the room where the x-ray photographs are made in order to ensure the use of the vault and so that no accumulation of unexposed and exposed films will occur in the x-ray room or anywhere outside the vault.

Second, because the rapid combustion of film is accompanied by the emission of large volumes of poisonous gases, ventilating flues should be run from the vault to the outside of the building. In order that these flues may not pass through any part of the interior of the building in which the vault is located, the vault should be located beside one of the exterior walls of the building.

Window in Flue Advisable

Cold weather, winds, and other factors make it advisable that a window be placed in the opening to the vent flue, although the ideal condition would be one in which there was no obstruction in the flue.

Since human lives depend on the speed of the opening of the vent window the quickest, most sensitive and most positive releasing method should be employed. This means the use of devices that operate on the principle of the rate of temperature rise rather than on the fixed temperature principle such as the fusible link.

Just as it is necessary to provide for the certain and speedy elimination of the lethal gases from the vault through the vent flue to the outside, so is it equally as necessary to provide against the gases entering the building in which the inside vault is located.

This is accomplished by quickly closing the horizontal gravity sliding fire door on the inside of the vault. Here again the fixed temperature device such as the fusible link is too slow for releasing the fire door, and so the more sensitive rate of temperature rise fire door release should be employed and arranged so as to close the door from a fire inside or outside of the vault.

This sliding fire door is normally kept open and is placed on the inside so that it will fit tightly over the door opening in case of an explosion or

fire and thus prevent the lethal gases from entering the building.

The outside door should be normally closed, of the swinging type with a door check that will keep the door closed and that will not permit the door to stand open. In case it is desirable for this door to be kept open temporarily it should be held open by a latch that will be tripped automatically from a fire inside or outside the vault by means of another rate of temperature rise fire door release.

There should never be more than one opening between the vault and the interior of the building.

Automatic Releasing Devices

In support of the advocacy of the rate of temperature rise releases for opening vent windows and closing fire doors, an excerpt is quoted from the report of "Sensitiveness Tests on Automatic Releasing Devices" from the 1917 Proceedings of the National Fire Protection Association:

"The rate of temperature rise device is very much more sensitive to fire than the fusible link, and under the same fire conditions will operate and release fire doors far in advance of the fusible link.

"Where the contents of buildings are of such a nature and where the drafts are liable to be such that there is a possibility of a flash or rapidly spreading fire and where the spread of fire through wall openings is likely to prove especially hazardous to life, the greater sensitiveness of the rate of temperature rise device gives it a decided advantage over the fusible link as a releasing device for automatic fire doors. This advantage is sufficiently marked to warrant the specification for its use under such conditions."

In the 1918 edition of the "Regulations of the National Board of Fire Underwriters for the Protection of Openings in Walls and Partitions Against Fire," as recommended by the National Fire Protection Association, the following rule was adopted and is in force to-day in the 1927 edition of these regulations:—

"14. AUTOMATIC DOORS.

"(a) Where the conditions are such that the spread of fire through the wall openings is likely to be very rapid or where the spread of fire through wall openings is likely seriously to endanger life, the fire doors should be operated by an approved automatic quick-operating door closing device or system.

"Note.—It should be noted that the question is not so much that of rise of temperature as of rapidity of spread, and that in all situations where a very rapidly spreading fire appears likely, the sensitive device should be used. Such situations include those where there is a liability of a train of flammable material leading through the opening, or where highly flammable material is present on each side of the opening in such close proximity to it that fire could pass through the opening before generating sufficient heat to operate the less sensitive door closing device."

Automatic fire control apparatus such as fire doors and vent windows and fire extinguishing apparatus, such as a sprinkler system, are actuated on one of two different principles, namely, (a) fixed temperature, or (b), rate of temperature rise.

The fixed temperature devices, generally some form of a fusible link, are set to be actuated at 165 degrees Fahrenheit, although they may be set to actuate at 135 degrees or 212 degrees and so forth. The fixed temperature device operates when its rupturing temperature thoroughly permeates the fusible link or other medium. There is a certain unavoidable delay or lag in all fixed temperature devices.

But where quick action is paramount, as in a film vault, the devices actuated by a rate of rise of temperature are recommended because they do not depend for operation on any particular degree of temperature being reached. These devices are set to operate as soon as the temperature begins to rise at a dangerous rate, say 15 degrees per minute, and unlike the fusible link do not wait for the temperature to reach the rupturing or melting point, 135, 165 or 212 degrees, but operate instantly whenever the temperature advances beyond the rate of rise they are set for. In other words the important point is the instantaneous action of the rate of temperature rise devices even before the general temperature of the vault has had a chance to rise any appreciable degree.

Methods of Fighting Burning Films

We have now segregated this hazardous film by surrounding it with a fire resistive vault, arranged ventilators to permit the deadly gases to pass harmlessly to the outside and arranged doors to close in time to prevent the gases from entering the hospital or office. Theoretically, human lives and the buildings are now safe while the film is being destroyed by fire.

Is it feasible to try to extinguish the burning film? Can it be done manually with hose streams? Can it be done with automatic sprinklers? Again let us analyze:—

First, each pound of nitrocellulose x-ray film, (depending on degree of temperature or quantity of oxygen) may produce about three cubic feet of deadly gas. Multiply the number of pounds of films you will have in your vault by this figure to

find the number of cubic feet of gas that will pour out of your vent flues if the fire is not extinguished. No matter how high the vent flue is carried, the wind is always an unknown factor.

So, from a life saving standpoint and regardless of segregation and control measures, it is imperative that the film fire be extinguished in order to stop the generation of the deadly gases.

Second, exposed x-ray films are kept only because of their scientific and legal liability value —which value is an unknown quantity until the test comes and is then sometimes so high as to justify the retention of nearly all films for years. Since they are so valuable, films should not be allowed to burn if there is any practicable way to extinguish such a fire. The value of the unexposed film in the vault is of course definitely known.

Water Will Quench Flames

Third, scores of tests and actual field experience over a period of years have proved conclusively that the nitrocellulose film fire can be successfully extinguished with water, provided the water is applied during the early stages of the fire, in proper quantities, with the proper distribution and with the film properly stored. These principles have long ago been discovered and verified in actual practice.

It is not practical to expect the public fire department or a private fire brigade to extinguish a film fire in a vault with hose streams or chemicals because they must respond to an alarm that may be delayed many minutes. Seconds, not minutes, are the important units of time in a film fire. When the fireman arrives, the film fire, on account of its extreme rapid burning quality, will almost invariably be a large hot fire and rapidly emitting volumes of poisonous gases. The only way to apply the hose stream to the fire will be to open the door between the vault and the rest of the building. This will endanger the lives of all those in the building and no fireman should so risk his own life for if he knows anything about fire fighting he knows he has not a fair chance to extinguish such a fire before the gas will kill him.

This points to the need of the automatic sprinkler system.

The obvious advantage the automatic sprinkler system has over the manually operated hose stream or chemical extinguisher is that the sprinkler system is already there, in place waiting for a fire and with no other duties to perform.

The proper number of sprinkler heads are placed so as to give the right distribution and quantity of water for complete extinguishment in a minimum of time.

The sprinkler system is automatic and not dependent on human aid for operation when the fire starts.

Since there should be no heating of any kind in a film vault, an empty pipe or dry pipe system of some sort should be used, as water standing in the sprinkler pipes in the vault might very likely freeze during winter. Hence the typical dry pipe system should be ruled out at once, because it is too slow in operation for severe fire hazards, such as film. This unfitness of the dry pipe system for severe hazards has been recognized in the "Regulations of the National Board of Fire Underwriters for Paint Spraying and Spray Booths," as recommended by the National Fire Protection Association, Edition of 1928, page 7, under Section 61—Protection, as follows:—

"Sprinklers connected to dry systems may not be expected to control spraying hazards."

Other objections to the dry pipe system are the necessity for maintaining air pressure on the system, the expense and bother of the maintenance and the fact that the fusing of the sprinkler head causes compressed air to be blown directly on the fire for some time before the water comes.

The typical wet pipe system should be ruled out because of the danger of water freezing in the pipes which would render the protection worthless at time of fire and because the wet pipe system is actuated by a fixed temperature device such as the fusible link of the automatic sprinkler. Considering the rapidity with which the poisonous gases are generated any fixed temperature device for releasing the water should be prohibited.

Preaction System Not Advised

The preaction system of automatic sprinklers is an empty pipe system and will not freeze. It has the advantage of giving an alarm by the rate of temperature rise method ahead of the fusing of the automatic sprinkler head. But the preaction system should also be ruled out because of the delay entailed by the necessity for the fixed temperature automatic sprinkler head to fuse before water can flow onto the fire.

The deluge system of unsealed sprinklers is an empty pipe system with open or unsealed sprinklers, and not subject to freezing. The deluge valve holds the water back until the temperature in the vault is rising at a rate of 15 degrees per minute at which instant the deluge valve releases the water that flows through the unsealed sprinklers directly on the fire and at the same moment automatically ringing an alarm gong.

The deluge system of unsealed sprinklers over a period of ten years has proved its speed and dependability by extinguishing film fires and quick burning fires in other hazardous materials.

Nitrocellulose film will necessarily be among almost any given quantity of x-ray film for the next ten years at least even if the use of all nitro film were discontinued. It is not practicable to discard inherently dangerous material solely because of its hazard when that material is so useful and can so easily be safely stored. Try to live through the whole day without using some nitrocellulose product. It cannot be done, since our fountain pens, eye glass rims, combs, vanity cases, tooth brushes and innumerable other articles in daily use are made of nitrocellulose.

As to acetatecellulose film one prominent x-ray specialist has already publicly announced that the acetate film should not be called "safety" film because he had proved through experiment that the burning of acetate film would cause gases fatal to animals.

What do we do about dynamite, electricity and other useful things capable of destroying life and property? Abandon them? No, we safeguard them. So is it entirely in order to talk of abandoning such a useful article as the nitrocellulose x-ray film because of disasters due directly to improper storage methods?

The next question that arises is naturally:—What shall be done with them?—and the obvious answer is—storage in a properly equipped vault.

Suggested Specifications

THE capacity of the vault should ordinarily not exceed 750 cubic feet as a greater capacity may provide an opportunity for an unsafe concentration of this hazardous class of material. The 6 ft. 5 in. x 12 ft. x 9 ft. 6 in. high vault shown has about 750 cubic feet, and will hold about 128 6 in. x 15 in. x 18 in. containers, which in turn will hold about 335 films each making a total of 42,880 films that will weigh about 3,200 pounds, for the average normal percentage of large to small film.

As the number of films per patient averages about 2.4 these 128 containers will hold about 17,920 envelopes representing that number of patients or cases. If all of the number of films mentioned above were 14 in. x 17 in. in size the weight would be about 5,060 pounds.

See also the plan of the 250 cubic foot vault which will hold about one-fourth the quantity of film that can be stored in the 750 cubic foot vault. Your insurance or civic bureau may permit a larger vault than of 750 cubic feet capacity.

Walls should be not less than 8 in. thickness of brick or 12 in. thickness of hollow tile, or 6 in. thickness of reinforced concrete. When the vault is built into an old building the brick or tile of the vault should be bonded in the brick of the exterior wall of the building. The vault should be plastered inside and outside with a good grade of cement plaster with hard smooth finish on the inside. The purpose of such careful plastering is to prevent gases from going through the walls, the Cleveland Clinic disaster having proved that an explosion will blow these gases through electric conduit and tiny holes in tile partitions. For this reason the one electric light conduit and the conduit for the air tubing where it passes through the walls should be carefully caulked with oakum for at least three inches. The pipe supplying the sprinklers should be the only other pipe entering the vault. Where this pipe and these conduits pierce the wall, the opening in the brick or tile of the wall should be made large enough so that the space around the pipes can be carefully cemented up for the entire thickness of the wall, and thus make a gas tight joint.

In a properly built fire resistive building the floors and ceilings will be sufficient for the floor and ceiling of the vault.

When the story in which the vault is to be placed is so high that the standard 6 ft. 5 in. x 12 ft. vault will have more than 750 (or other limit of) cubic feet, a false ceiling, constructed of metal lath and cement plaster 1 in. thick or the equivalent, and with no openings to the concealed space above may be used to limit the total interior vault space to 750 (or other limit of) cubic feet.

In buildings having wooden floors, the floor and roof of the vault should each be constructed of reinforced concrete of not less than 6 ins. in thickness.

All lights in a film vault should be at the ceiling and of the fixed marine type, with the vaporproof globes and wiring in rigid metal conduit. The wall switch should be outside the vault and should be arranged with a small pilot light to indicate on the outside of the vault whether the vault lights are on or off. No electric fan or other electric motor should be permitted in the vault.

On account of the advisability of keeping the film at as low a temperature as practical there should be no heating whatsoever in the vault and no heating pipes of any kind whatsoever should run through the vault. Administrators of hospitals in cold latitudes have stated that there is no necessity for heat in x-ray film vaults.

The cross section opening of the ventilators should be a total of not less than 1.3 sq. in. per cubic foot of vault. Glass not thicker than 1/16

in. or other fragile material or paper may be used in the window, and in any event the material should be of such a nature as to fail from the force of a very slight explosion. The area of the glass or other material should be the effective sectional area of the vent opening.

The vent window hinges should be of brass and located at the bottom of the window. The window should always be arranged to open outward, that is, in the same direction as the travel of the gases out through the flue. The window should be set on an angle, leaning to the outside and should be weighted so as to fall easily and immediately when the automatic window opening apparatus functions. The window may be kept closed by means of a small light snap fastener that is easily overcome by the window opening apparatus. The automatic window opening apparatus should be actuated when the rate of temperature rise is equal to or greater than 15 degrees Fahrenheit per minute.

The apparatus should be so constructed that the window cannot be engaged closed unless the automatic window opening apparatus is in the "set" position.

In warm weather it may be desirable to open the window manually, and this may be done since the closing of the window for cold weather requires the automatic release equipment to be "set."

The two vent windows may be released by one automatic release equipment. If burglar proofing is desired, bars may be arranged over the vent opening, provided they will not interfere with the automatic operation of the window.

Flues Should Lead Directly Outside

The vent flue should pass directly from the vault to the outside of the building and never through any portion whatever of the interior of the building because of the likelihood of a break or leak in the vent flue that might permit gases in the interior of the building. The vent flue may run from the vault along the outside of the exterior wall and the outlet of each vent should be above the roof and made to face a street, court or other clear space giving a distance of at least fifty feet to doors, windows and openings of other buildings.

The exterior metal flue should be of proper metal, thickness and construction so as to resist moisture and wind and should be gas and water tight. A screen should be installed in top of flue to prevent sparks from entering the flue. Old masonry flues should not be used on account of the liability of leakage of gas to other parts of the building.

The inside horizontal gravity sliding fire door and its hardware should bear the Class B labels of the Underwriters Laboratories, Inc., and should close automatically when the temperature inside or outside the vault is rising at the rate of 15 degrees Fahrenheit or more per minute.

The outside swinging door should also bear the Underwriters Laboratories label with a labeled door check, and it is suggested that the door check be of a type that will not permit the door to be left open.

If it is desirable to leave the door open at certain times, the door should be fitted with a latch that will keep the door open until it is automatically tripped by means of fire door release that operates when the temperature inside or outside the vault is rising at the rate of 15 degrees Fahrenheit or more per minute.

Independent Scuppers Prescribed

Scuppers or floor drains should be installed having a total area equal to 3 sq. in. for each sprinkler head in the vault. This is to ensure proper disposal of water from a deluge system. These scuppers or drains should pass immediately to the outside of the building through the exterior wall of the vault, and the drain should not pass through any other portion of the building, nor should this vault drain empty into the building sewerage piping because of the likelihood of poisonous gases being forced into the building through this means. Basement drains should have an outfall independent of any other sewerage system.

There should be one standard ½ in. unsealed sprinkler (that is, automatic sprinkler with struts, link and valve omitted) for every 75 cubic feet of vault space. The pipe sizes should be larger than the standard schedule and should comply with the schedule for the deluge system of unsealed sprinklers.

The sprinklers should be supplied from a deluge valve that is actuated by a rate of temperature rise of 15 or more degrees Fahrenheit per minute. An alarm gong, either electric or water motor or both should be installed in connection with the deluge valve.

The water supply should be sufficient to deliver twenty gallons of water per minute through each sprinkler head for a period of not less than one hour.

Shelving may be made of pipe, angle iron or wood. The slats should be few in number and narrow so as to permit water to flow freely around and over the containers to cool them. For the 6 in. or less wide x 15 in. high x 18 in. long container, the slats should not be more than two in number, or more than 4 ins. wide, or nearer together

than seven inches, and no slat should be nearer than four inches to the wall.

Shelving may be built so that the containers may slide forward and down making it unnecessary to lift the container off the racks provided such shelving in no way interferes with the free flow of the water around, over and between the containers.

Containers should be constructed of not less than No. 20 U. S. gauge steel, or ⅛ in. hard pressed fiber and should be water tight and waterproof. The cover of the container should be so fitted as to shed water from sprinklers above when the containers are placed in their normal positions on the shelves. The waterproof container will overcome the natural objection of many hospital administrators to sprinklers.

The container should be ventilated so that any gases generated inside the container may pass outside the container into the vault without blowing the cover off the container. The containers should be corrugated on the sides and have handles on the ends so arranged that the containers cannot be placed so close to each other or to the walls as to prevent the water from the sprinklers from flowing between and around all containers. The same corrugations may be used for spacing the containers and for the escape of gas from the container. Corrugations may be stamped into the sides of the cover and opposite nicks in the top of the container body. There should be at least twelve vertical corrugations ⅛ in. deep on each cover.

Container Dimensions Listed

The inside dimensions of the suggested container should be 18¼ ins. long, 15½ ins. high, and never more than 6 ins. wide. This size will accommodate about 335 films of all sizes in about 140 manila envelopes. With the usual percentages of 14 in. x 17 in., 11 in. x 14 in., 10 in. x 12 in. and 8 in. x 10 in. film, this container will hold about twenty-five pounds of film and if all the 335 films are 14 ins. x 17 ins., the weight will be about forty pounds.

It is believed that it would be undesirable for the film vault operator to lift a greater weight than twenty-five pounds from the shelves, and it is certainly undesirable to expose a greater number of films to one fire. To reduce the weight to be lifted, and to reduce further the quantity of films exposed to one fire, the containers could be made 2 ins., 3 ins. or 4 ins. wide.

The 15½ in. high by 18¼ in. long container will accommodate the 14 in. x 17 in. unexposed film in the ordinary packages. A container 15 ins. high and 18¼ ins. long will amply accommodate the envelope for the 14 in. x 17 in. x-ray film.

There is great danger from decomposition or fire in a container larger than the 6 in. x 15 in. x 18 in. size and so nothing larger is recommended even for current filing for it must be remembered that in the current filing is where the fire is most likely to originate.

The containers herein described are in production by makers of this class of goods.

A small movable platform about 2 ft. high with two steps leading up to the platform could be used as a combination stepladder and table for handling film in and out of the individual containers—containers to be placed on the platform when filing film.

Large "Explosives—No Smoking" signs with red letters not less than six ins. high should be conspicuously placed inside the vault and outside the vault door.

No film, exposed or unexposed, should be left outside the containers in this vault. Only a half day or a day's supply of unexposed film should be on hand in the x-ray photographic room.

Limit Number of Tiers

In a vault of average height, that is, approximately 9 ft. 6 in. high, there should be no more than four tiers of film containers of the size described in this article. Under no circumstances should the top of any container be higher than two feet below the deflector of the sprinkler heads.

In order to understand better why a deluge system of unsealed sprinklers is advocated for x-ray film storage, and why the small containers described in this article are advocated, let us trace a typical fire in a vault constructed and equipped as outlined in this article.

Suppose the film vault attendant has brought some films to be filed in the vault and that a container has been taken from the shelf, the cover removed and while the films are being placed in the container the fire starts. There will be from one to more than 300 films in the container. The films burn very rapidly and are liberating gas.

Almost any hospital attendant who has heard of the Cleveland Clinic disaster will realize the danger and will be wise enough to leave the vault immediately.

If there were no deluge system, the heat from the burning films in the one container would be sufficient, even with the ventilators open, to heat other containers to such a point that the films inside would decompose (as only about 200 to 300 degrees Fahrenheit is required to decompose film) and in such a case the entire contents of the vault might be destroyed with the liberation of

gases through the vent that might do untold harm out of doors.

But with a deluge system of unsealed sprinklers installed, as soon as the film in the open container was ignited, and the temperature of the room had risen at the speed of 15 degrees per minute, instantly the deluge system would be in operation, first, spraying cold water on the burning film, thereby extinguishing it, and second, spraying cold water over, and around every other container in the vault, thereby keeping them cool, so that the decomposition point of the film inside the containers could not be reached.

If individual sprinkler heads, each with its own fixed temperature device should be relied on, many seconds would be wasted. These sprinklers will not all fuse simultaneously and the delay might permit the heat from the burning film to raise the temperature of nearby containers to the point of decomposition, thus generating more gas and making the fire more difficult to fight.

It is highly important in view of the loss of life from the deadly gases to extinguish the fire and thus stop the generation of these gases at the earliest possible moment, for with the generation of every additional cubic foot of poisonous gas someone's life may be in danger.

Of equal importance in the quick control of film fires is a container of the smallest practicable size—for two reasons: first, the smaller the container the more easily is it insulated against heat by flowing water from the sprinklers and second,the smaller the container the less film will be subject to being decomposed at one time. This has been the practice for years in the storage of motion picture films so the idea is not offered as new at this time.

Thus does the deluge system extinguish the fire where it originated, and prevent the film in other containers from igniting, while the material and construction of the containers preserve the unburned film against water damage.

Nitrocellulose X-Ray Film Fire Tests

THE following tests were made at Youngstown, Ohio. A representative of THE MODERN HOSPITAL witnessed tests 1, 2 and 3, which were performed July 23, 1929. Representatives from five of the Cleveland hospitals witnessed tests No. 4, 5, 6 and 7, which were performed July 24, 1929.

The object of the tests was to observe the action of the deluge system on x-ray film fires, with films stored in small containers.

The structure used as a vault was a sheet iron booth 12 ft. x 12 ft. x 9 ft. One side was entirely open and two openings about two feet in diameter were in the side opposite the open side. The vault was out in the open.

The vault was equipped with four standard ½ in. unsealed sprinklers, spaced as shown on the plan of the 750 cu. ft. vault. Two of the sprinklers were placed at such a distance from the vault wall as to ensure the sprinklers being just over the front edge of the film containers as shown in Fig. 1. The sprinklers were supplied by a 1½ in. pipe from a 1½ in. deluge valve installed at the opposite side of the vault from the containers. One heat actuating device was installed on the ceiling of the vault and connected to the deluge valve by copper tubing run in rigid metal conduit. Two standard ½ in. 165 degree automatic sprinkler heads were installed at the ceiling of the vault.

The water pressure at the deluge valve was about 45 pounds with water flowing through the four unsealed sprinklers.

The x-ray film containers were 6 ins. wide, 18¼ ins. long and 15½ ins. high, inside measurements. One was of ⅛ in. hard fiber and six were of No. 20 gauge steel with welded seams. The sides of the covers were corrugated to provide ventilation and to prevent containers being placed so close together as to interfere with the free flow of water down the sides of all containers.

No photographs were made of tests No. 1, 2, 3 and 7. Photographs as shown in Figs. No. 1, 2, 3, 4, 5, 6 and 7 were made of Tests No. 4, 5, 6.

All x-ray films used were 14 ins. x 17 ins.

For test No. 1 containers were set up as shown in Fig. 1 except that fiber box was at the left bottom instead of at top of rack. The three top containers were loaded with 21 films each, the film being in manila envelopes, three films to the envelope. Three of the containers below held 24 films each, the films being in envelopes as above. The cover was removed from the fiber container at the bottom left and 24 films were placed in 8 envelopes in this container. About 6 sq. ft. of scrap film was used as fuse, the fuse being stuffed into three of the envelopes and the other end of fuse allowed to overhang the edge of the container. Fuse was ignited with a match.

Five seconds after ignition of the fuse, the scrap film in the open container ignited with a puff. Fourteen seconds later or nineteen seconds after ignition, the deluge valve tripped and water issued from the unsealed sprinklers on the containers. Fire extinguished in two minutes.

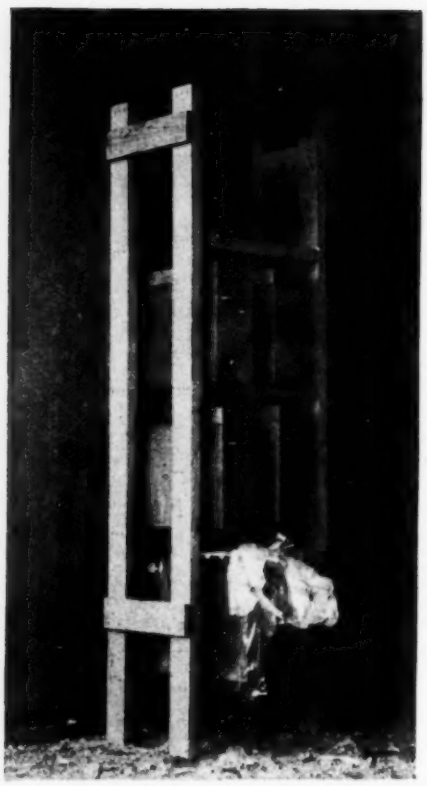


Fig. 1 at the left shows the film containers arranged in the rack for one of the experiments. The scrap film hanging from the bottom container was used as a fuse with which to start the fire.

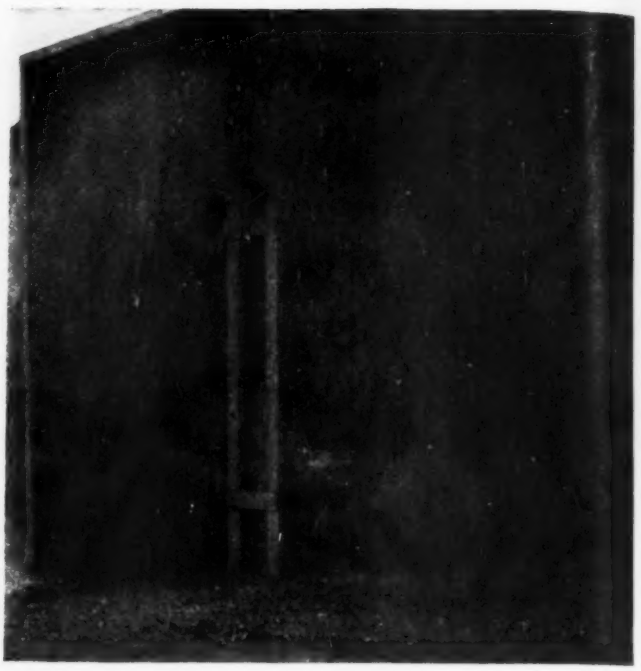


Fig. 3. Water issuing from the unsealed sprinklers.

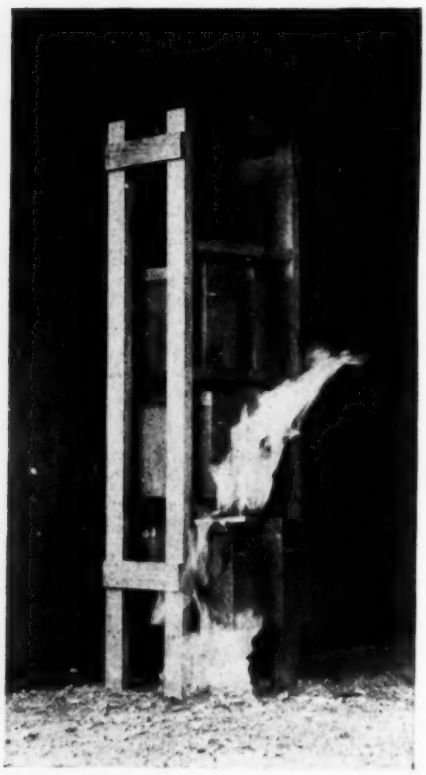
Neither of the automatic sprinkler heads fused.

The 24 films in open container weighed 2½ pounds and the 8 paper envelopes weighed 14 ounces.

No smoke, fire or water entered any of the containers except the open one in which the fire was started and in the container immediately above it.

In the open container the films were about 50 per cent burned.

In the closed container next above the open container, the six films in two of the eight envelopes were unburned. Practically all films in the remaining six envelopes were destroyed but about 75 per cent of the paper envelopes remained. The films in this box seemed to be partially destroyed by destructive distillation as there was a gummy deposit left inside the cover of the container. A



The first flames after the fuse was lighted are shown in Fig. 2, at the left. The open container at the bottom left contained twenty-one films evenly divided in seven envelopes.

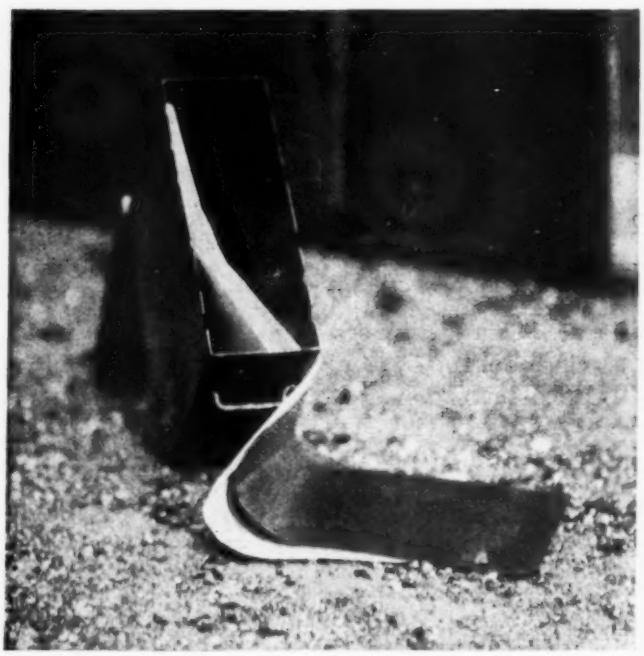


Fig. 4. Here are shown the contents, in perfect condition, of the container directly above the fire.

Fig. 5 at the left shows the flames when ten x-ray films not in envelopes, were ignited in an open container outside the vault and allowed to burn freely. They were entirely consumed in sixty-eight seconds.

brownish yellow gas issued from this container, but no flame.

For test No. 2 containers were placed and loaded with film as in test No. 1, except the bottom left container which was loaded with 24 films in 8 envelopes, also about 2 sq. ft. of scrap nitrocellulose film, and an electric heater was placed in the bottom of this container and cover placed on the container.

Electric current was turned on and in 11 seconds the film began decomposing as was evidenced by dense volumes of brownish yellow smoke issuing from the vents in the container cover. No flame was observed. At the end of five minutes the current was turned off and the test stopped. Cover was removed from container and all films were found destroyed and paper envelopes were 50 per cent destroyed.

The films in the other six containers were not damaged by smoke and were not decomposed. The deluge system did not operate and the automatic sprinkler heads did not fuse.

For test No. 3 containers were placed and loaded as in test No. 1, except that the bottom left container was loaded with 100 envelopes containing about 300 films, with an electric heater placed between envelopes at the center of the container. The cover was placed on the container at the bottom left and the current turned on.

Fig. 7. But two containers were used in this experiment.

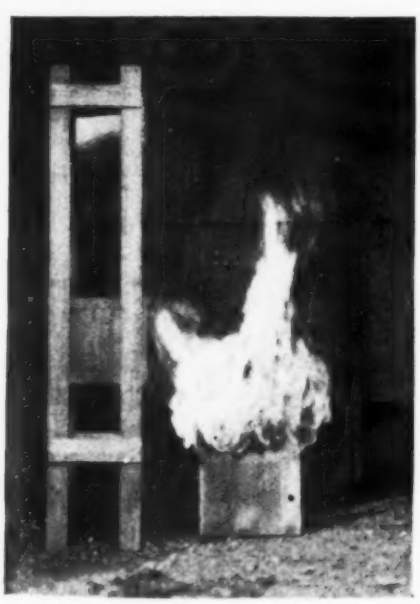


Fig. 6 at the left shows films placed in container similar to that shown in Fig. 5, but ignited inside the vault under the deluge system. Half of these films were destroyed.

Smoke issued from vents in container cover in one minute, 50 seconds.

The deluge valve tripped and water issued through the unsealed sprinklers on the containers in four minutes, 50 seconds.

Large volumes of brownish yellow smoke continued to issue from the container, the current being turned off about ten minutes after it was turned on. In about twenty minutes after the current was turned on, the smoking practically ceased. The water was shut off and the cover removed from the container.

The decomposition of all films and paper in this one container was practically complete.

No evidence of fire, destructive distillation or water was found in any of the six other contain-

ers. A slight yellow smudge was noted on some of the envelopes, this smudge evidently being the condensation of the smoke that penetrated the containers through the vents in the covers. This smudge was not noted on any of the films.

No flame was observed throughout the test.

The automatic sprinkler heads did not fuse.

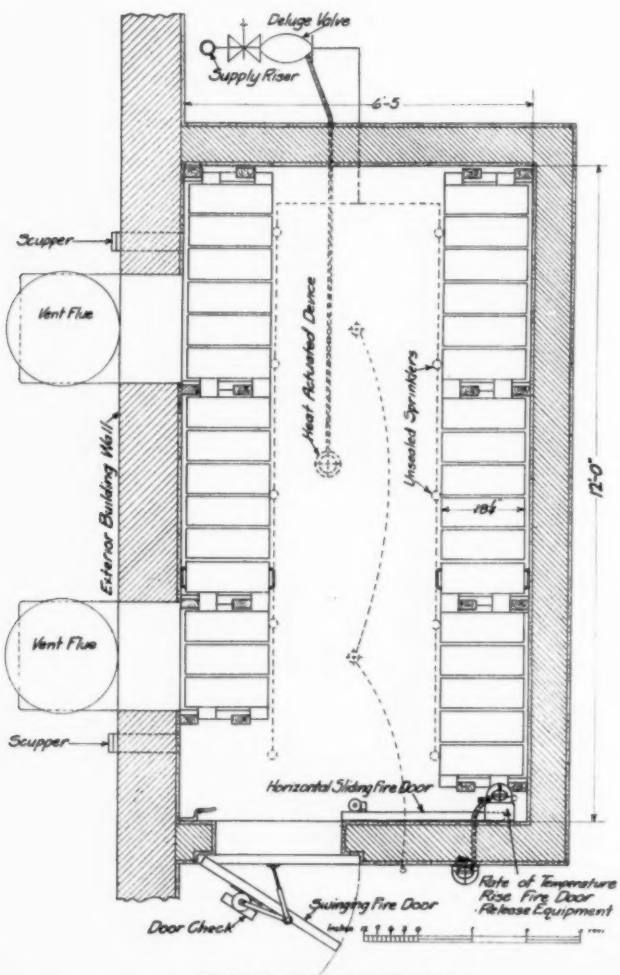
Test No. 4 was a repetition of test No. 1. Containers were stacked as shown in Fig. 1 and loaded as in test No. 1, except that the open container at bottom left contained a total of 21 films evenly divided in seven envelopes. See flames in Fig. 2.

Eleven seconds elapsed from time of lighting the fuse until the deluge valve tripped and the water issued through the unsealed sprinklers on the containers and the fire. See Fig. 3.

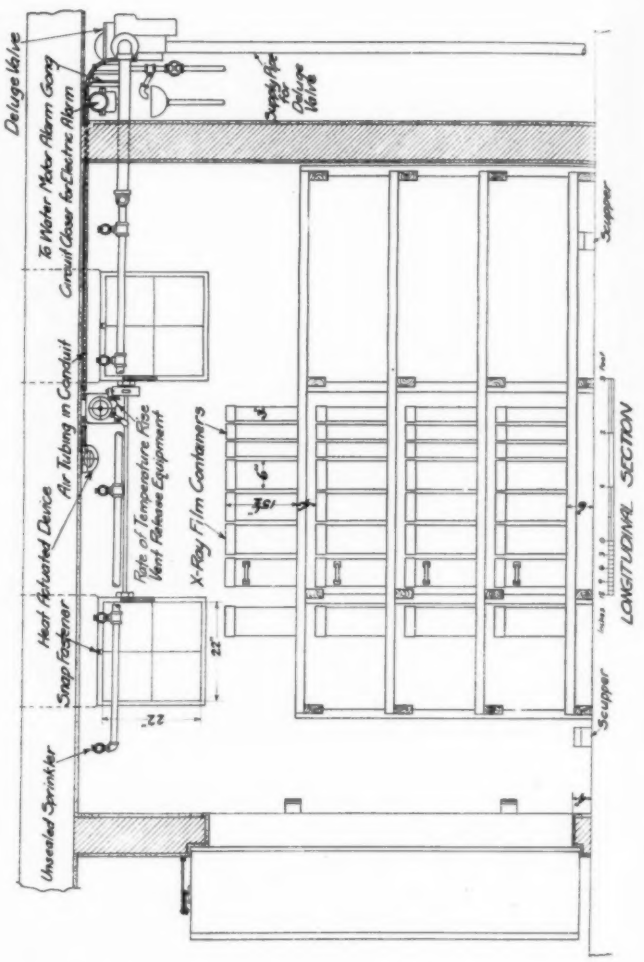
Flames disappeared in 56 seconds after ignition. Heavy brownish yellow smoke issued from the open container.

Decomposition ceased in one minute, 40 seconds from the time of ignition.

Approximately 50 per cent of the 21 films in the seven envelopes of the container were destroyed.



The larger of the two vaults described is shown above.



Shelving and sprinkler system are shown here.

There was no fire, smoke, decomposition or water in any of the six other containers. See Fig. 4 for photograph of contents of the container directly above the container in which the fire was set. Note perfect condition of the film and the envelopes.

The automatic sprinkler heads did not fuse.

The Unenveloped Film Test

Ten x-ray films (not in envelopes) were ignited in an open container outside vault and allowed to burn freely, in test No. 5. The films were entirely consumed in 68 seconds, leaving only a black ash. See Fig. 5.

A container was similarly loaded, placed in vault under the deluge system and film ignited. See Fig. 6.

Fourteen seconds after ignition, the deluge valve tripped and water issued from the unsealed sprinklers on to the fire.

Thirty-five seconds after ignition the fire was extinguished. Fifty per cent of the films were destroyed.

The automatic sprinkler heads did not fuse.

Only two steel containers were used in the sixth

test. One open container at the bottom of the rack was loaded with seven films without envelopes. Immediately above was one closed container, loaded with one film not in envelope. The film in the lower container was then lighted with a scrap film fuse. Fourteen seconds after ignition the deluge valve tripped and water issued from the unsealed sprinklers onto the containers. See Fig. 7.

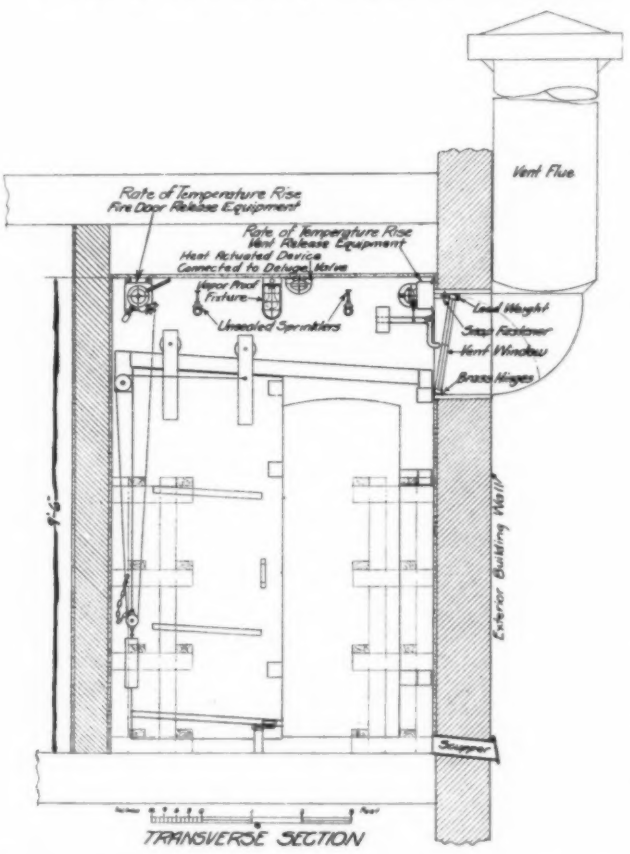
One minute after ignition the cover of upper container was lifted slightly, but not off, by a miniature explosion in the upper container.

Film in both containers destroyed. The automatic sprinkler heads did not fuse.

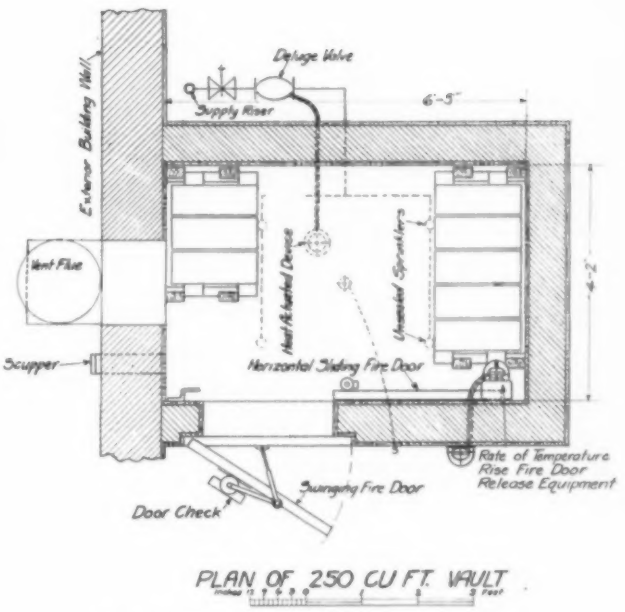
The Gunpowder Test

In order to observe the action of the deluge system of unsealed sprinklers in the event of a minor explosion or flash such as has occurred in x-ray film vaults, all films were removed from the vault and one pound of black gunpowder was evenly spread over a flat horizontal surface 24 ins. x 28 ins. and elevated 34 inches above the ground, placed just to the left of the center of the vault in the last test. Gunpowder was used owing to the difficulty of controlling the force of a gas explosion.

The gunpowder was ignited by means of a fuse and the slight explosion perceptibly shook the metal top of the vault. Four seconds elapsed between the puff of the gunpowder and the flow of water through the unsealed sprinklers onto the containers.



The vent flue is illustrated in this transverse view of the film vault.



Plan showing the smaller of the vaults.

The automatic sprinkler heads did not fuse.

The tests proved that the deluge system of unsealed sprinklers, which is actuated by a rate of temperature rise, will operate ahead of the automatic sprinkler head, which is actuated by a fixed temperature. None of the automatic sprinkler heads fused in any of the tests.

The tests showed the heat insulating value of flowing water when properly applied in the early stages of decomposition or fire. In tests No. 1 and 6, decomposition occurred in only the one container immediately above the open container that was fired. In tests No. 3 and 4, no effect was noted on any film except in the containers that were fired.

Small Flash Actuates Deluge System

Test No. 7 showed that a small explosion or flash generates sufficient heat to actuate the deluge system, although the heat was not sustained by further fire.

Test No. 3 showed that decomposition without flame in a typically loaded closed container will cause the temperature to rise with a sufficient speed to actuate the deluge system.

In general it seems safe to conclude that with the storage methods advocated, a deluge system of unsealed sprinklers will confine fire and decomposition to the container in which the fire originated with a fair chance for decomposition to spread to one container above only.

Viewing Food Service From the Dietitian's Standpoint

By EDA FERBERT
Dietitian, St. Luke's Hospital, Duluth, Minn.

IF YOU were to read a history dealing with the beginning of dietetics or of dietitians, you would see that no doubt it was a person with a research mind, one capable of seeing into the future, who first saw the crying need for trained women in hospitals to teach nurses to prepare food for the sick. This was in 1891. Within the next year or two, the first diet kitchens were established. From that time on to the present, the duties of the dietitian have increased, the scope of her work has expanded and from the position of "glorified cook," through an era of question and doubt, her profession has come to take an important part in the hospital organization.

Importance of Dietetics Now Recognized

Within the past fifteen years the department of dietetics has been accepted as a necessary part of a hospital, equal in importance to the other laboratories, including the chemical and the x-ray. This brings to my mind a sketch I saw in one of the hospital magazines during my first six months as a dietitian. The title was "A New Member Is Added to the Hospital Staff." This picture portrayed the superintendent, the superintendent of nurses and several doctors seated around a table. Then the door to the room opened and the dietitian walked in to take her place at the table. In many diseases, such as diabetes and nephritis, the correct diagnosis of the disease would be of little value were it not for the fact that the dietitian is present to complete the prescription with the correct foods and to give the proper instruction to patients.

In the administration of the dietary department of a hospital, there must be no friction, the wheels must move smoothly and the oil must be applied by the executive or chief dietitian. Some hospitals are still without the services of a dietitian; others employ a trained dietitian to take charge of the special diets and the diet kitchen only and to teach dietetics. She has nothing to do with the main kitchen or the help.

The department of dietetics can create the greatest dissatisfaction, and conversely, can do more to help a hospital than almost any other single part of the organization. It has the greatest expenditure of money of any single department, approximately thirty per cent of the entire expenditure. This department is an important factor of the organization and is not a "necessary evil" which must be taken care of in some fashion. Why is it so often given little consideration and why is the administrative officer loath to add the dietitian to his staff?

The duties of the dietitian are threefold—administrative or executive, scientific or therapeutic, teaching or educational. Let us consider each of these duties separately.

The executive dietitian is responsible for the planning of the meals for the patients coming under the regular, light, soft and liquid diets, and for the meals of the nurses, the doctors and the employees.

What are some of the factors that enter into the planning of meals? The diet must contain sufficient calories to maintain normal weight. It must be a balanced diet, that is, it must contain all the food properties in the correct proportions for proper functioning of the body, and it must have sufficient bulk. Some may say, "Why all the worry about a balanced diet? The appetite should be a person's guide." This, of course, is foolish and is well illustrated by the craving of sweets by diabetics. Do we value human lives less than the farmer does his live stock? He realized the necessity of balanced rations long ago.

Cost Must Be Considered

The cost must be kept in mind. There are leftovers to be utilized which must be so used as to prevent monotony, I might say friction, for I know you have seen or heard the uproar at the mere mention of the word "hash." How many cooks are on duty to prepare the meals? Are all the waitresses on? Does one of the girls serving at the steam table have her half-day? Is there variety to the meal? Have you had any of

the foods recently? What is in the market now? Which of the fresh vegetables or fruits can I use to best advantage? These are some of the questions the executive dietitian must constantly ask herself.

The executive dietitian should be entirely or in part the purchasing agent of foods and food equipment, or if she is not permitted to do the buying, her suggestions should be carefully considered.

Many Duties Involved

She must engage and teach the constantly changing employees of her department. She must supervise the preparation and serving of all meals in serving kitchens and in dining rooms. She must see that the incoming and outgoing supplies are checked or charged as the case may be. She must watch the waste through the garbage cans, must take the dish count and see that the silver is counted and that appropriate requisitions are made. She must be peacemaker and see that there is no friction among her employees as this would be a hindrance to the efficiency of the department. She must set an example by being faithful and loyal, by doing the things expected of her in a cheerful and obliging manner, so that she in turn can expect and demand the respect of those coming under her jurisdiction. She must be able to meet emergencies and must always be outwardly calm and cool, never appearing to be nonplussed, no matter what her state of mind may be or how much she trembles inwardly. She must have some knowledge of the care of plumbing and equipment, and must be capable of doing slight repair work. She must be ever ready and willing to carry on the task of planning extra dinners and of officiating at the refreshments at parties and commencement. She must be willing to help whosoever seeks her advice. Last but not least, she must realize that she is there to give service and must do her utmost to please.

Of all the functions that every modern hospital is expected to carry on, the primary one must be the right care of the sick and injured. It is here that the second duty of a dietitian enters in—scientific or therapeutic. Patients coming into the hospital for help and relief from certain diseases such as diabetes or anemia, would not always obtain complete care if there were not someone capable of carrying out the physician's orders and guiding the patient along the right paths.

The methods of serving the special diets is an individual problem in each hospital, because of the placement of kitchens and the methods used in serving diets, that is, whether there is central service or whether there are serving kitchens on each floor. Whatever method is used, it should be so well organized that there is no opportunity for any mistake, such as omitting part of the food or the giving of a substitute, for these diets are sometimes served by a nurse who has not yet had her course in diet in disease or her diet kitchen training. Not only would it be a detriment to the patient but a waste of the dietitian's time and the hospital's money if the correct foods or diets were not served to the patients for whom they were intended. In the diseases mentioned above the diet is sometimes the only "drug" these patients receive, so it is important that there be adequate means of checking these trays in order to learn what foods are not eaten. If the food is not eaten because the patient does not like this particular food, a note of this fact should be made so that the same food will not be offered to him again. Direct service from the main diet kitchen to the patient and the tray brought back to the kitchen, is, I believe, the best method of service. This is especially true of a weighed diet for then we have better opportunity for checking leftovers and dislikes. If space is available and if a hospital is likely to have enough ambulatory patients on special diets to warrant it, a dining room off the main diet kitchen is a time and energy saver.

Serving Problems Often Difficult

The problem of serving food hot or cold, as the case may be, and serving it attractively, taking into consideration patients' likes and dislikes, is at all times difficult of solution but becomes more complex in the case of special diets. Often these special diets cannot be flavored or seasoned to the patient's liking, so that attractive appearance and temperature become still more important. At no time is it excusable to have the foods of a special diet lukewarm. The hospital superintendent should see to it that the equipment as requisitioned by the dietitian is secured, and it is then the dietitian's part to see that the food is properly heated and served. I know the dietitian is given the reputation of being an unreasonable tyrant if she makes the nurse who is responsible for serving these diets reheat and reserve these trays.

The last duty, that of teaching, is one that occupies a great deal of the dietitian's time. She has student nurses, interns, patients, student dietitians and at times the attending staff to teach and to keep informed regarding the latest developments along the line of diet. The nurse must be given as much knowledge of foods and nutrition and of diet in disease as the time allowed will permit. The patient must be able to carry on his diet after his discharge from the hospital and

in order to accomplish this he must be taught how to calculate his diet and what to eat.

Occasionally, for some reason or other, people cannot come into the hospital and the dietitian is asked to go into the home to teach what is necessary about the diet. Some will say that this is not one of the duties of the dietary department. But is not the hospital an institution for service to the community? Do we not wish to establish the best relations between the community and the hospital?

The time that the dietitian should be on duty should be a matter of her own good judgment. The dietitian is head of a department, as is the superintendent of nurses and she is often so interested in her department and in the smooth sailing of the entire hospital that she will stay on or come on any time that is necessary for the betterment of her department.

The Dietitian in the Small Hospital

The problem confronting the smaller hospital is how to afford a dietitian. I will not say, as some have said and believe, that a dietitian "saves her salary." If money alone is to be considered, she often prevents the loss of food and equipment to the hospital which might be carried off by an employee or be unnecessarily thrown away. But in planning for economy, money is not the only factor to consider, we must remember also satisfaction, friendly feeling and smooth organization.

Often the positions of dietitian and housekeeper are combined and the position is given to a person with dietitian's training, or a dietitian may be found who has had some business training and is therefore qualified to serve also on the office staff. Occasionally we find a dietitian who has had a nurse's training or a nurse with a dietitian's training who might be able to occupy the position of supervisor and also act as dietitian. Would not the superintendent of nurses or the superintendent of a smaller hospital be free to carry on certain supervisory or training school duties if relieved of the dietitian's duties, thereby saving the salary of an extra assistant?

The state requires that the student nurses spend a certain time in the diet kitchen under a graduate dietitian and when there is no dietitian in the hospital the only solution to this problem is affiliation. It may be difficult to get other hospitals to take on the extra nurses for diet kitchen training, as superintendents of nurses are now eager to give their own nurses as much time in the diet kitchen as possible, since they see the need for and the value of this training. From my own experience, I am not sure that I am unreservedly in favor of affiliation.

How Chicago Looks After Its Tuberculosis Cases

Dispensary procedure as carried on by the Chicago Municipal Tuberculosis Sanitarium should be of interest to all institutions concerned with the treatment of tuberculosis.

Every individual open case is treated on its merits and measures are used in meeting the demands of each individual patient, according to the bulletin of the sanitarium. These measures are: friendly adjustment, forcible hospitalization, quarantine officer's call and placard.

Friendly adjustment measures taken by the dispensary staff prove effective in 95 per cent of the cases, the sanitarium records show.

Parents Advised of Dangers

Concerning the dispensary patient, the parents or family are advised guardedly and sympathetically about the danger to the children and the condition of the patient. Any one of three courses is open to the family: The patient may go to a sanitarium; the patient may find a home where there are no children; the children may be removed to the preventorium connected with the Chicago Municipal Tuberculosis Sanitarium, to the homes of friends or relatives or to some boarding house, home or institution, in which they will not be subjected to continued, daily, massive infection.

When the patient proves noncooperative, coercive measures must be taken. In extreme cases forcible hospitalization is necessary. Isolation or segregation of the open case to a degree sufficient to protect the child, is enforced to the letter.

Providing Vacations for Hospital Workers

That vacations should be provided for in all employment agreements and should be regarded as a bonus or reward for continuity of service is the belief of G. W. Olson, superintendent, California Lutheran Hospital, Los Angeles.

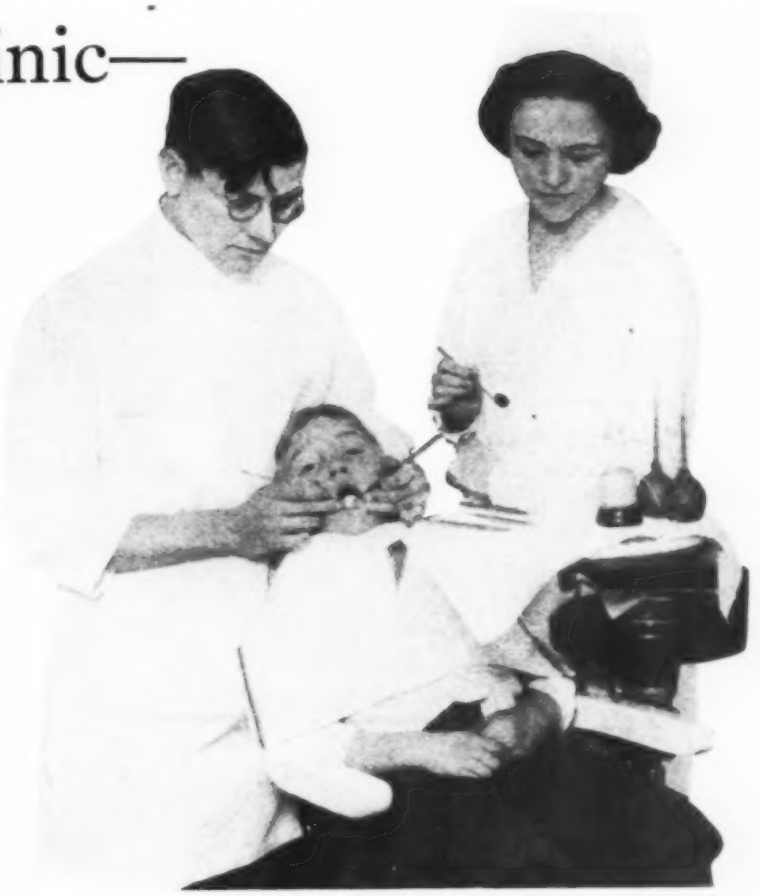
To allow any vacation for less than a year's service is unwise, Mr. Olson believes, although there may be instances when in the interest of the employee's health or for an equally good reason the annual vacation may be divided into two periods, one taken at the end of six months, the other on the completion of the year. When vacation time is thus advanced to an employee, it should be understood that if the employment agreement is not fulfilled as to length of service, the wages paid for vacation will be applied on working time in the final financial settlement.

Vacation Is Logical Reward

"Vacation," Mr. Olson says," is the most logical reward that can be given over and beyond an adequate wage to industrious and loyal workers."

The vacation policy at the California Lutheran Hospital is to give a month's vacation with pay to all professional and technical workers in executive or advisory capacities; two weeks with full pay to all other workers. No vacation is given for less than a year's service, but half the vacation may be taken after six months on condition that if the worker quits before the year is up, the vacation must be made up.

The Dental Clinic—An Asset and an Obligation*



By

E. M. BLUESTONE, M.D.

Director, Montefiore Hospital,

New York City

FOR three years I served the cause of public health in a distant land and was disappointed to find on my return that the dental clinic, which was showing so much promise before I left, did not keep pace with this promise for the reason that it was not receiving general recognition at the hands of the hospital and sanatorium administrator. A number of institutions seemed to be lagging and needed encouragement to place dental service in its proper position in the scheme of medical organization. It was hard to believe that there still remained an administrator who doubted the importance of dental service in any medical establishment, but it was apparently so. An explanation that will help us to apply the remedy ought to be found.

We seem to be educated enough to see through the fallacies of many things, social and medical, but we do relatively little about it. Perhaps the machinery of reorganization generally has become cumbersome with the mechanical-administrative inventions and discoveries of our day. We talk of money in figures that stagger the imagination, but the machinery for effecting changes, those social changes that are essential to the life of a community, seems to have become out of all proportion complex and hard to apply. The problem of dental service is however more simple than appears at first glance.

This is not an attempt at philosophy, but it is surprising to me that one of the important specialties in the practice of medicine has not received wider recognition at the hands of those who are charged with the task of organizing and administering the public health service in all of its branches.

Where shall we seek the explanation? Is it because dentistry is a comparatively recent growth, now represented by an independent profession, and must be given time before it is admitted to full membership in the brotherhood? If dentistry were a specialty in the curriculum of our medical studies and were practiced on a cooperative basis as the other specialties are supposed to be practiced, would matters be different? If this particular specialty requires intensive training out of all proportion to the other medical specialties, is it none the less part and parcel of the physician's bag of tricks for handling his daily problems? Can it be that we are in a period of depression because the pendulum swung too far forward not so long ago in the superemphasis that was given to the oral infections in their relation to systemic conditions? Is the difference a matter of social economics only and does the physician hesitate to refer his patient to the dentist because of the

*Address delivered at the Tuberculosis Sanatorium Conference, New York, May 22, 1929.

financial factors involved? Are we making distinctions where there is really no difference? I want to be frank about it and these questions deserve a reply if we are to justify our high standard of service to the sick in hospitals and sanatoriums.

We may take it for granted that the physician recognizes the importance of the care of the mouth as he does the care of any other part of the body. He recognizes it in principle at least. He learns it in medical school even if he does not in subsequent life always include an examination of the mouth in his routine physical examinations. How much of a responsibility have we, as public health administrators, to coordinate these two forms of medical service in our plan of organization? This is not a rhetorical question even though the reply seems to be so obvious. Under ideal circumstances the patient is entitled to the full benefit of special medical (in which I shall hereafter include dental) service for any condition that the medical sciences (I shall hereafter include dentistry among them) may be able to deal with. I believe this to be a fair statement and nothing can be more easily proved. One does not have to go to Sir Thomas More or to Plato for inspiration in an argument of this kind. If these worthies of other generations and other ages, who labored to reduce the struggle for existence to easier terms, were to come to life today, one may safely guess what their attitude would be on this subject.

Everything But a Tooth Man

I am tempted to begin my argument by putting the burden of proof on the other side. Why not have a well organized dental clinic? Why provide an institutional patient with the services of a nose and throat specialist and not of a dentist? We are blessed with diversity of specialization—I mean that the specialist has become specialized and, like the big bugs and little bugs, it seems to go on *ad infinitum*. The dentist in himself proves it and he too has been deeply touched by this development of specialization. Why the skin man and not the tooth man? The principles of pathology and bacteriology grant no immunity to the dental field and the x-ray penetrates or is withheld in accordance with the rules of physics and not by any arbitrary distinctions of man. Must the dental sciences be tolerated only, or will they be formally recognized? Can the omission of the dental clinic be explained logically as well as historically? Is it not possible to apply a species of "all or none" law (as in physiology) in the treatment of any patient no matter where or for whatever condition he applies for treatment?

I mused on all these things and, while sitting at my desk one day in the depths of a brown study, a knock came at the door and my thoughts were quickly transferred to a local hospital problem that compelled my immediate attention. It was our supervising engineer, a careful and observant worker, who was always at my side to help in the solution of the mechanical problems of the hospital. The matter that he put before me could not be postponed. Would I go with him? There was no alternative and we descended to the power plant in the depths of the hospital. Everything that I had been doing must wait, even the elaboration of the dental idea.

Hospital "Teeth" Carefully Tended

On the way down the stairs our engineer began to unfold his problem and as he spoke I could appreciate its importance. The boilers were not functioning efficiently because the furnace was not firing properly. It was easy to see that the output of electrical and mechanical energy for the entire hospital compound was involved in the trouble. The engineer had made his own diagnosis and, as our specialist in such matters, was ready to correct it. Considerable expenditure was involved. A number of things had happened, partly through carelessness and neglect but also through natural circumstances. The grates of the furnace were bent and were, besides, heavy with what are known as clinkers. You all know your power house and how much of your time hospital maintenance consumes, and you know the consequences if a damaged grate is not replaced immediately. You know also that these grates must be inspected at least once a month and that their normal life is roughly from two to six months. You know, or your specialized engineer does, how to prevent such trouble and how to cure it when it comes.

Someone had fed the coal into the furnace carelessly and, in addition, had permitted the hot ashes to pile up under the grates, eventually bending them with the accumulated heat. The grade of the coal had not been as good as we were led to believe by our physical and chemical examinations, the grates had not been cleaned every three hours and they had not been kept moving, as they should be. As a result clinkers, hard as the grate itself, had formed on the bars. "An ounce of prevention," remarked our engineer, knowing that his remark would strike home, "is worth a pound of cure."

The problem from the administrative point of view was easy enough to handle. The major and minor premises were there—draw your own conclusions as you would in a syllogism of the first order. We analyzed the cause and drew the moral

Dental department, National Home for Disabled Volunteer Soldiers, Los Angeles County, Calif.

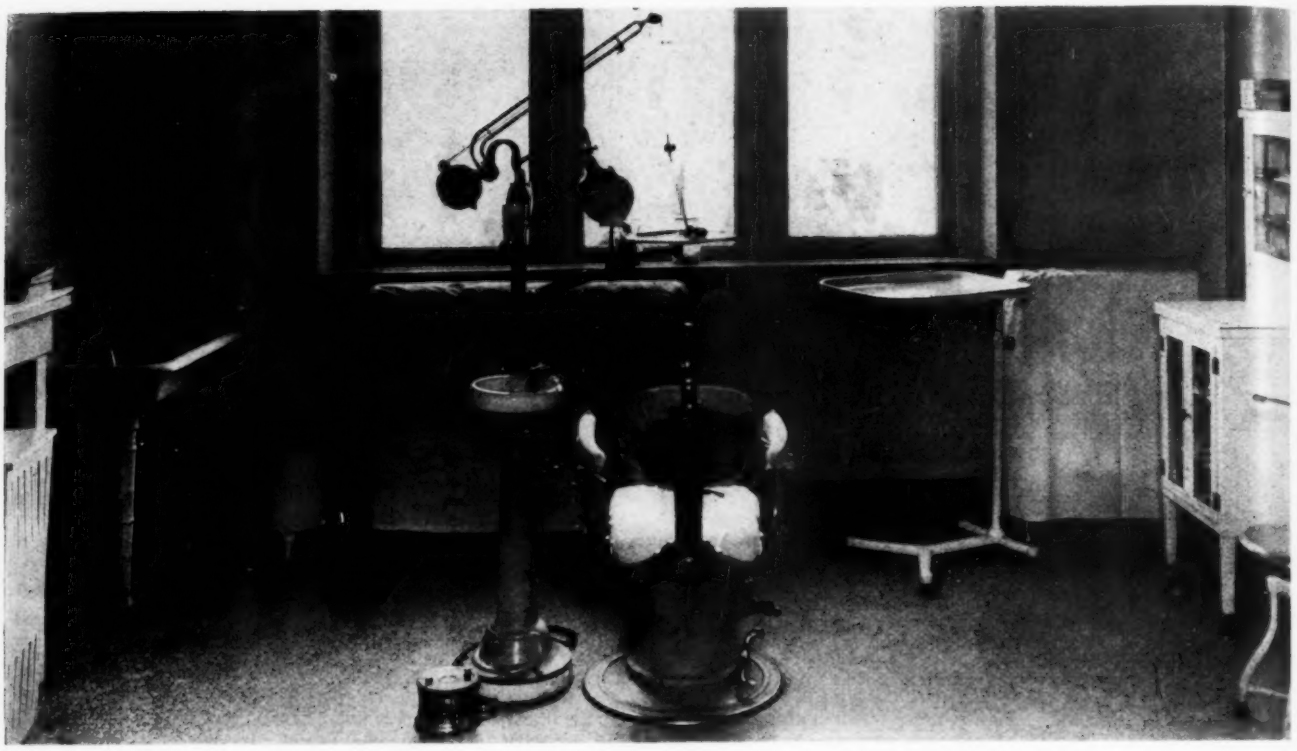
therefrom. We knew the remedy both from the preventive and curative standpoint. We knew the consequences if we did not act with efficiency and dispatch. The expense involved—unfortunately the running of a hospital or sanatorium is still looked upon primarily as a matter of expense and will be until our social practices are made to harmonize a little more with our principles—was relatively small when you considered the cost of running the institution.

The next step was to report to the chairman of the building committee of our board of trustees, a sympathetic and socially minded business man, who grasped the situation at once and approved the expenditures involved, subject, of course, to the final confirmation of the board. The board later on, when the repair was made, heard the report about the incident, deplored the carelessness that brought it about, regretted the waste of any sum however small that might have served a better purpose if used for some direct benefit to the patient, and made laws to guard against a recurrence.

What a stir was made! How much valuable time, energy and money were expended to keep the teeth of the hospital clean. These huge jaws of iron were moving day and night as fuel was being poured into the furnace. They would hereafter be kept free from clinkers by the application every few hours of a process known to the dentists as scaling. The ashes that collected underneath would be removed promptly. As you have probably guessed, we gave our attention to the fuel too, but this is a dental and not a dietetic argument, so I shall not relate the whole story.

Mouth Care Must Be Considered

The engineer had broken into my reverie but put into my hands the most valuable argument that I could use in pleading the cause of a well organized dental clinic. I could not help wondering that there should still be an administrator left who regarded the human mechanism with secondary consideration in his approach to the task of hospital management. If we gave half as much study and care to our human problems that we give to our machinery, how much happier places our institutions would be. The paradox of it all is that the machine is silent while the patient is vocal and yet science, both medical and dental, has developed far enough to enable us to see consequences even if the human machine, like the other, remains silent. The care of the mouth cannot be separated from the general problem of the care of the well and the care of the sick. Every last effort that you will make to prove the value of preventive or curative medicine, the importance of both to the in-



Dental department, Denver General Hospital, Denver, Colo.

dividual and to the community, must, if you will or no, include the field of the dentist. My argument is now complete and if any of you should again wish to take issue with me, it will only be with the understanding that those of you who have not a well organized dental clinic are guilty until you prove yourselves innocent.

Cost Is Minor Problem

Let me draw attention to certain practical considerations, hinted at above, that the administration must take into account in a problem of this kind. The first is the relative urgency of the mechanical and human problems, and the second is the cost. With regard to the former, that is a matter for every administrator to take up with his board, and I can tell you from personal experience that I have never found any member of a board of trustees who did not respond promptly to a straightforward humanitarian argument. You will observe that this remark places the burden on the administrator, since I am convinced that, with a little effort, support will be forthcoming. The cost is, in my opinion, a minor consideration.

Almost any educated dentist, and any dentist who gives some of his valuable time to the community is an educated dentist, will be glad to serve and you will find that the payment of a salary is not always required. This is, however, a purely budgetary matter. If I had my way I would pay every dentist and doctor who served the hospital, and more than that, I would put him on full time. The fact is that you can obtain excellent service for the asking without charge. You will find somewhere in your institution a clinic room that will meet the fundamental requirements conveniently. Nursing and clerical help are so easily adjusted in the average institution that the matter can be handled under ordinary circumstances without burdensome expenditure. If you pay your professional staff, the total cost may average one dollar for each treatment, every kind of mechanical or other treatment being included. This is, in my opinion, a paying investment if you insist on looking at it from the business point of view.

Volunteer Staff Does Much Work

At the Gun Hill Road division of the Montefiore Hospital, with a bed capacity of six hundred, we give about 6,000 treatments annually and spend a total of about $6,000 for dental service, paying our intern staff of two and one of the visiting dentists. This is about one-half of 1 per cent of our total budget. There is a volunteer staff of five dentists, in addition to the paid staff, all of them comprising an enthusiastic group who are rendering valuable service to the patients and the community. This expenditure might be regarded as liberal and good dental service can indeed be started with much less.

I wish to leave the impression that the dental department may not, under any circumstances, be

treated in an offhand administrative manner. The dental department, like the medical department, is entitled to its proportionate share of the hospital budget and should be provided primarily with routine facilities for diagnosis and treatment. The medical, surgical and laboratory specialties of the hospital should not be permitted to monopolize the credit for the annual deficit. "A deficit" says Doctor Goldwater, "is often the symbol of a noble ambition." It might as well be the dental department as any other, logically speaking. With a progressive dental staff it is reasonable to expect that a certain amount of teaching will develop as a by-product, as well as research, depending on the originality and investigative power of the staff. This means that interest should be stimulated in dental as in medical research and extra-budgetary funds should be made available on an equal basis to all of the specialties depending on the availability of properly qualified men. Space should be assigned in the medical library for dental books and periodicals. Pathological, bacteriological and chemical laboratory facilities should be provided.

Recommended Dental Standards

There is only left for me to discuss briefly the standards of dental service that have been recommended by the Associated Out-Patient Clinics, New York, last year. Those who have the slightest doubt as to the best manner of organizing a dental department, of expanding it, of maintaining it or of defining its relations to other departments or to the community, would do well to consult the valuable literature of the Associated Out-Patient Clinics, of the Committee on Dispensary Development of the United Hospital Fund and of the New York Tuberculosis and Health Association. In the meantime, the recommendations are, briefly, that the dental service in any hospital should primarily be considered a consultation service and should complement any other examination and treatment that the patient is receiving. It is recommended that the service for clearing up foci of infection and putting a patient's mouth in hygienic condition should include, first, reference of all patients to the dental department; second, mouth examination including x-ray of all the teeth; third, necessary surgical and mechanical work recommended by the dentist, and, fourth, consultation between the physician and the dentist.

I do not wish to dwell upon the administrative aspects of the dental clinic because the underlying principles are basic for all medical administrative matters, and for those of you who are in doubt, more expert help is now available in the organizations that I have noted above than ever before.

A Successful Group Nursing Plan

For the success of group nursing in the hospital, the nurse personnel should be carefully chosen, M. Della DeLong, Grace Hospital, Detroit, pointed out in a paper that was read at the American Hospital Association meeting in Atlantic City, on Grace Hospital's successful two years' experience in group nursing.

Nurses are engaged at a monthly salary, with meals only, for an eight-hour schedule. Three nurses, therefore, are required for twenty-four hours for a group of two or three patients. An additional allowance is given the nurse for room and laundry outside the hospital, but the nurses' home is preferable if facilities permit. The various groups are classified. With the discharge of a full group of patients, the same nurse group is automatically discontinued until a new assignment, at which time the nurses are again called for duty.

The group nursing scheme at Grace Hospital has in no way detracted from the work of the special nurses engaged in private duty, according to Miss DeLong. Because only patients who cannot afford the special nurse fee take advantage of the group nursing service, the two types of nursing service in no way conflict, it was emphasized.

Charge for medical and surgical group nursing is $5 a day for a twelve-hour service and $7.50 for twenty-four-hour continuous nursing. Obstetrical nursing with an assignment of two patients for each group is $6 for twelve hours and $9 for twenty-four hours.

Group nursing, Miss DeLong emphasized, enables the hospital to furnish special nursing service within the means of the salaried individual and it ensures continuity of special nurse service for many patients whose welfare demands individual attention.

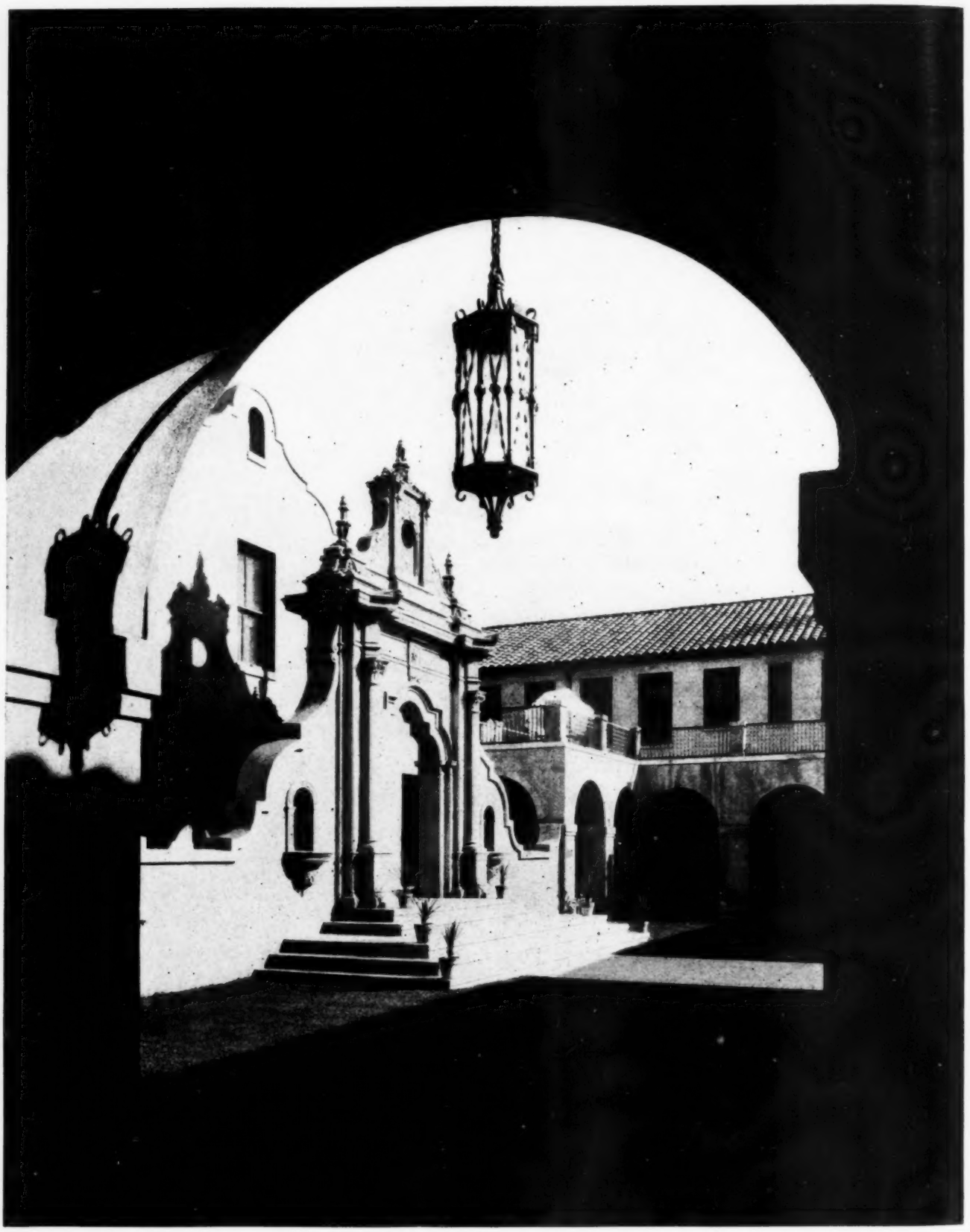
The Duty of the General Hospital to the Mentally Ill

A problem confronting the general hospital is the providing of adequate care for potential mental conditions, according to the *American Journal of Nursing*. The article is quoted in part:

"Practically no provision is made for the care of nervous illness in any general hospital. Many patients who are suffering from nervous disabilities recover with early treatment, and a failure to obtain this treatment leads to chronicity or incurability. Every general hospital is constantly harboring mental cases unknowingly. But the large group of borderline cases, social, economic or domestic maladjustments is not being cared for properly.

"The misunderstood, mishandled group of psychoneurotics with physical complaints becomes a vexatious problem for the practitioner and nurse in a general hospital. This group alone justifies the demand for adequate psychiatric departments for these cases. If 5 per cent of the hospital beds in city hospitals were set aside for a psychopathic department with hydrotherapy, occupational therapy and competent nursing, these people could be scientifically cared for and the majority readjusted or cured.

"Until hospital authorities recognize the need, and prepare future institutions to meet the need, medical science cannot hope to discharge its full duty in the care of the sick."



Distinctive in its architecture the Long Beach Community Hospital, Long Beach, Calif., is an exceptionally beautiful institution. This photograph shows a scene in the hospital patio.

Practical Administrative Problems:

How to Save Money in the School of Nursing

By JOSEPH C. DOANE, M.D.
Medical Director, Jewish Hospital, Philadelphia

TO DISCUSS economy in the nursing department without the addition of many qualifications and explanations is somewhat dangerous. To some, economy is synonymous with penury and carries in its wake faulty and shallow educational practices and inadequate nursing in all of its objectionable phases. Nevertheless, it is far from the purpose of this article to imply that economy is not possible or necessary in the school for nurses. Yet, while the conservation of funds is usually necessary and always far from easy, in not rare instances a misinterpretation of the term brings about the financial starvation of at least the educational side of the hospital's nursing school. This in turn generates a vicious circle that affects not only the care of the hospital's patients but also the treatment of the sick, present and future, in the community generally.

No Accurate Measure of Value

There is no basis upon which to judge accurately either the educational or financial advisability of conducting a school for nurses. It has been said that hospital trustees too often inaugurate the teaching of nurses because such a policy decreases the expenditure of money necessary to conduct the hospital. This is no doubt true in some instances. To profiteer in student nurses is both an educational and a social sin. On the other hand, since for so many years the directress of the training school has been forced to present an attitude of aggression in order to provide for the mere existence of her school, hospital administrators frequently hold the belief that nursing officials have but little regard for money.

In some instances it may be true that as a psychologic result of the continuous striving for financial pabulum with which to nourish the educational side of her work there has developed in the mind of the directress of nurses a state of chronic economic dissatisfaction. Moreover, in some instances there is no doubt that nurses do not always appreciate the extreme difficulty under which the superintendent labors in order to secure funds for maintenance.

The first and most important avenue of approach to this problem is to try to create a confidence, a mutual understanding between the superintendents of the hospital and the school of nursing concerning financial matters. A frank discussion of such problems by these officials is of first importance. Often the directress of the school is not informed as to the source or the amount of funds required or of the existence of deficits which may make necessary the curtailment of expenses along all lines. As a result, when the school for nurses is asked to share in any retrenchment program, its directress sometimes misinterprets this request, considering it an act of persecution of her department by an unsympathetic executive.

Herein lies the danger of preaching too strenuously the doctrine of training school autonomy. This is particularly so when this term is interpreted to imply a noncooperative existence of the nursing division within the hospital itself. Since it is axiomatic that no part of any activity can be greater than the whole, there cannot be in the hospital any restrictive boundary lines that denote an independent financial or administrative subkingdom without decreasing the efficiency of the whole effort. The most serious by-product of this difficulty, however, is the development of personal friction and false conclusions because the original premises have been in error.

Must Assume Part of Responsibility

There can be no economy, with efficiency and mutual understanding, if the school of nursing is not willing to assume its part of the responsibility and often its quota of the economic burden. The first mistake to avoid, then, is personal misunderstandings between the hospital and nursing executives. If the superintendent believes that the directress of nurses and her colleagues have no regard for money and do not understand the difficulties incident to conducting the hospital, he is likely to misunderstand her budgetary requests. A practice of some superintendents is to discount the requisitions that emerge from the hospitals'

training schools by some preconceived per cent. The natural reaction on the part of the nurse is to counteract this procedure by requisitioning more supplies or maintenance money than she actually needs. Here is developed a puerile and unbusinesslike method of conducting business that is unworthy of two mature professional persons.

Such practices lead to unhappiness and friction between these two important hospital officials. On the other hand, the hospital executive would do well to consider carefully the basic educational requirements underlying the conduct of a training school. He should endeavor to inform himself thoroughly concerning the regulations of state and federal nursing boards so that no argument by the directress of nurses may be necessary to bring about compliance with them. He should become firmly convinced of the fact that an implied contract exists between the hospital and the nurse which morally binds the hospital to provide every possible educational opportunity for the young woman in training.

Nurse Resents Lack of Supplies

It may be said, too, that the nurse in some instances resents the presence of a nonmedical superintendent when he or she sees fit to inquire into the details of conducting her school. She has been known to resent indignantly the absence of necessary equipment and supplies when the harassed superintendent is trying in every known way to procure funds with which to supply these needs.

The cost of nursing the patients of the hospital represents a major outlay of institutional funds. Many a hospital board of trustees has vainly sought for an avenue of escape from the seemingly impossible task of properly educating the nurse and at the same time caring for the patient. To some the solution seemed to represent the discontinuance of the training school and the hiring of graduate nurses, while to others it represented an increase in the number of pupils. It is true that student nurses are worth money and that their presence often saves money. On the other hand, it is equally true that to conduct a school for nurses properly requires almost if not as great a per capita outlay of money as it does to employ graduates. This question has been discussed pro and con in many articles and on numerous platforms. In the last analysis the difficulty in arriving at an answer statistically lies in the impossibility of laying down any standard of excellence that will adequately and specifically justify or explain the expenditure of greater or lesser amounts of money. In a well known school for nurses, for example, it has been computed that it is necessary to spend for maintenance and education, $1,285 a year for each pupil nurse. It has been found also that for salary and maintenance $1,800 a year is required to procure the services of each graduate nurse. By a more or less complicated and reliable course of computation, it has been estimated that on a basis of student efficiency, compared with that of the graduate, the hospital loses $125 a year on each pupil.

It may be said by the critical that the fallacy of this argument lies in the fact that a graduate nurse has been estimated to be worth $1,810 (the amount represented by her salary and maintenance) a year to the institution. The whole course of reasoning, hinging as it does, not so much on the estimated expense as on the theoretical value of the graduate, in reality may be considered an imperfect estimate rather than a correct comparison.

In another institution it has been found that each student nurse costs the hospital fifty-four cents an hour. In still another it was shown that the nursing expense per patient per day was $3.61 and in a third hospital $2.03 per day. These statistics have been cited merely to focus attention upon the fact that while it is possible to compute the cost per patient per day of nursing, it is not easy to arrive at a conclusion as to whether this money is well spent. What is the reason, for example, of a variance of approximately 45 per cent in the last two named per capita costs for nursing? In consideration of the hospitals making this report, it would require a brave person indeed to conclude that there is this relative difference in the nursing care that the patients receive in these outstanding institutions.

Classroom Instruction Often Ineffective

Saving money in the nursing department certainly does not justify assigning pupil nurses to private or semiprivate cases and charging a regulation fee for their services. This is exploitation in a most objectionable form, particularly if a student is assigned to a particular type of case beyond a period necessary to her educational needs. One of the chief difficulties encountered, in small schools, at least, is the ineffectiveness of actual classroom instruction. Nor is this in a majority of instances due to a lack of teaching ability on the part of the instructress herself. Practical nursing procedures are much more likely to be well taught than is subject matter presented didactically by a staff physician.

The saving of time on the part of the student is as important as the conservation of time from the physician's standpoint. In one instance it was found that a physician who was a popular and able

teacher was delivering a course of eight lectures to each of three hospital nursing groups. What a waste such a policy entails! How sensible it would be to unite these three groups to allow the physician to deliver the same material in eight, rather than twenty-four hours. Forty or fifty students perhaps may be economically taught, whereas the instruction of groups of but four or five members represents an extravagance.

Central School Often Pays

It has been found in some instances that to establish a central school for the instruction of nurses, in the preliminary subjects at least, has been a wise measure. In one instance where the fee is $60 a student for each term, a number of hospitals have felt that this represents an inordinate and wasteful outlay of money. When it is considered that the hospitals cooperating were able to save a considerable sum of money in laboratory equipment as well as in the salaries of teaching personnel, and when it is understood that the grade of instruction these students receive is unquestionably superior to the instruction they could enjoy in their own hospitals, not a little justification for spending such a sum of money for fees is immediately at hand.

In the school budget to which reference has been made, $435 a year for each student was allowed for educational purposes. This amount represents the expenditure per student required in a large school. However, while $60 a nurse for each term of four months' instruction, where the classes are large in number and where ample physical facilities are at hand, might represent the expenditure annually of an amount in excess of $500, yet in the small school with inadequate educational equipment this cost would probably not be at all unreasonable.

One way of saving money and its equivalent, time, in the conduct of the school for nurses in small hospitals would be to inaugurate a cooperative educational venture in which several hospitals might share. However, some experienced directress will immediately contend that to send classes to other institutions for instruction is time consuming and confusing insofar as the evaluation of the methods of presenting the subject matter is concerned. Yet, there is a practical midway point which will, if reached, not only improve the instruction of the nurses but also spare the hospital's pocketbook. The question of adequacy of instruction is almost as difficult to decide as is the question of efficiency in the care of the patient.

There is one commodity that seems to be considered by members of the hospital's personnel generally as limitless in amount and as representing but little economic value. This is the time of members not only of the hospital's personnel, but also of its in and out-patient clientele as well. The saving of time and steps on the part of the nurse is a most necessary and important requirement. Not only must the physical construction of the institution be such that lines of communication are shortened to the greatest degree possible, but the organization of the nursing department should be such that the day's work is carried out with the fewest number of motions and, hence, with the least possible expenditure of time.

When it is remembered that each ward patient requires daily in excess of five and a half hours of actual nursing to be properly treated, it is easy to understand why the hospital, which, although it has an average number of students and graduates, must economize in time to allow this amount of attention to be given to each of the hospital's patients. Although it must be conceded that this degree and amount of nursing attention are considerably in excess of that possible in most institutions, it is equally true that it can be mathematically proved that this standard does not exceed a reasonable ideal of service. Moreover, in assigning nurses to ward service, dependent somewhat on the location and size of these units, such a service requisite is useful in determining the number of pupil or general duty nurses required.

Economies in Time

In the waiting room of the office of the superintendent of nurses, there is too often to be found a group of graduates or students seeking a decision from their superior, or some information they consider necessary to their work. Too frequently nurses are called off duty to answer trivial questions that might be answered at times other than those when their presence is urgently required in the wards. Departmental set-up and supervision ought to be such that the majority of such problems could be solved locally without entailing a visit to the office of the directress. To allow personal telephone calls to reach a nurse on duty is a questionable policy except in case of an emergency. Personal visits to nurses on duty by former patients or their friends and relatives should be forbidden. Fortunately many superintendents of nurses have endeavored either to minimize the number of conferences that are held during the day or so to time such meetings that the care of the sick will not be interfered with.

Reports are of the greatest importance. But the amount of clerical work required of a supervising nurse often defeats the very purpose for

which such reports were established. Moreover, daily, weekly or monthly reports must represent, not replace, efficient service to patients, paper statements themselves being of no moment to the sick man. There is a type of training school administrator, fortunately representing the minority, who expects to learn of the kind of nursing work done in the wards largely through reports, and whose presence at the bedside is, to say the least, not the daily rule. Here one often finds a report ridden nursing department of the most cumbersome kind.

The writing of requisitions for supplies, repairs and equipment necessary to carry on the work of the nurse is particularly time consuming. When it is considered that in some instances these requisitions must be written and rewritten in order to secure a delivery of the articles or services desired, the expense of the time and effort on the part of the nurse, plus the actual money necessary for the purchase of the goods, makes the whole transaction exorbitant in price when it is compared with the actual good accruing to the hospital.

Some superintendents, before they take action, have a policy of awaiting a second or third requisition to be certain the nurse meant what she said when she asked for supplies. This practice not only brings discouragement and lowered morale, but it is also a foolish waste in many ways. Inventories are absolutely necessary, but they should be taken by the nurse, if such is the requirement, at intervals frequent enough only to guarantee reasonable protection against loss or theft of the hospital's property. Printed or mimeographed inventory forms should be at hand, and the nurse should not be required to write and rewrite in long hand lists of hospital property.

Supervisor Has Full Day

In many institutions the supervisory nurse is in reality the administrator of her division. When one reads a detailed account of what is expected administratively of such an officer in a medium or large sized institution, one wonders how she has any time in which to supervise the work of untrained pupils or to acquaint herself with the actual condition of patients under her care. A few details of the supervisor's administrative day may serve to emphasize this point. Her day begins with the reading of the night report, the calling of the roll of pupils, the inspecting of their uniforms, the discussion with students as to the details of the ward work for the day and the arranging of hours off duty for students and employees. It is she who is responsible for the performance of the clerical duties of the department, which range from accurately keeping a record of alcohol and narcotics used to the checking of incoming and outgoing laundry, and from the arrangement for ward class work for graduate students to making rounds with an exacting and sometimes irritable chief.

In some hospitals the business of securing accurate information as to the condition of patients is time consuming from the standpoint of the nurse. When a condition sheet is at hand in the telephone office the nurse is sometimes spared many calls to the telephone. On the other hand, she is required to execute this sheet twice daily and this is in itself something of a task when many patients are found in her department. The nurse must also be a rather proficient bookkeeper, although not in the commonly accepted sense.

Too Much Clerical Work Involved

In the duty book of one institution were found the following books that the nurse must keep: admission book, transfer, death and discharge book, critically ill book, thermometer and instrument book, consultation book, dressing book, inventory book, time book for employees, narcotic and liquor book, condition of patients book, articles lost book, patients' clothes book, bath book and requisition book. The requisition book consisted of eight types, representing as many varieties of articles to be requisitioned by the nurse. Is it any wonder that in this hospital, visiting physicians are continually complaining that the head nurse is never to be found on the ward, and that she is of the type that occupies a chair at a desk instead of performing the necessary nursing work in the wards? And yet, in this, as in many other instances, the nurse is in no way personally to blame. It is the hospital that is at fault in employing for this purpose a skilled person costing $1,800 a year, whereas a twenty dollar a week clerk would easily suffice. Here is an opportunity to save both money and morale.

It has been said that the average nurse cares nothing for the safety of property belonging to the hospital. It has been claimed by the members of families to which she has been called after graduation that the nurse is extravagant of linen supplies of all kinds. This may or may not be true as a general rule, but the fact remains that most hospitals have not done their part to forestall such complaints by teaching the nurse much concerning the money value of supplies that she requisitions so casually during her student days. To sign a requisition slip representing several dollars' worth of supplies is one thing, and to pay hard earned money over the counter for each

yard or pound of supplies is something entirely different. The use of show cases in which are placed standard hospital articles with their prices attached has been suggested as a means of teaching property responsibility to nurses in a concrete way. Some successful administrators of training schools have carried out his plan with apparent success. The cost of such articles as gauze, muslin, tubes of catgut, adhesive plaster, instruments and drugs is not great per unit, but in the aggregate it amounts to many dollars.

Individual Responsibility Necessary

Holding each person to strict accountability for loss or misuse of hospital goods is the next lesson following the primary lesson of unit cost. Many institutions cannot understand why certain departments use so much gauze when little or no surgical work is done there. It has been found by careful administrators that many hundreds of yards of gauze are annually used by nurses for personal purposes. Some way of discouraging this practice had to be discovered. An opportunity for the purchase of gauze for such uses at nominal rates sometimes has been successful. In some instances, hospital muslin and linen have been diverted by nurses for personal use. This practice represents but one example of the one and a hundred different varieties of what after all represents a thoughtless form of petty larceny but which costs the hospitals in the field many thousands of dollars annually. Whatever the policy adopted, the practice of using hospital property for purposes other than the care of patients should be strongly discouraged.

Not the least of the institution's expense is that of drugs. A common practice of graduate nurses on private floors is to requisition special orders of standard drugs for their individual patients instead of withdrawing such medication from stock bottles. This leads to waste and is a practice that should not be countenanced.

In one institution of moderate size, it was found that seventy-five gallons of alcohol were being used monthly. A too highly concentrated solution was being used for sponges and for baths, and the alcohol was wrung out on the floor. In other words, this expensive drug was being thoughtlessly and wantonly wasted. In the same hospital, lysol was requisitioned in gallon amounts from the drug store. A 1 per cent solution was generally employed. In other words, 100 gallons of lysol solution were issued to wards as a routine. As a result of a feeling that this drug was available in limitless amounts, an extravagant policy of lavishly employing it as a deodorant was practiced, and no attempt was made to effect an economy.

It would be wise if the druggists were required to make a weekly inspection of medicine closets and to withdraw from these stocks all unused and expensive drugs that give evidence of not being required immediately. Often a considerable loss of money is caused by the deterioration of drugs ordered in large quantities and kept indefinitely in a distant ward unit closet.

At times there is encountered on the part of nurses an attitude that reflects the conviction that they are expected only to care for patients, and that the protection of property and the economic utilization of supplies are apparently incidental and casual to their day's work. This is a false frame of mind and one to be strenuously discouraged. The nurse should be required to receipt for all new supplies, instruments and equipment of any sort. Once she has signed for these goods, it is her duty to bring about their greatest practical utilization. Inventories are tedious but are a part of the nurse's work. To be required to return a worn out article before she secures a new one is just as reasonable. The direct exchange system for all nonexpendable articles is economical as well as practical.

Although the hospital executive has a duty to his board to hold the reins of economy firmly over every department of the hospital, he should save the time and effort of the nurse insofar as promptly filling requisitions is concerned. By the same token, the superintendent of nurses should be in no way tardy in cooperating to the fullest extent in making the hospital dollar buy the greatest amount of service to the sick, and incidentally, the finest and most practical educational opportunities for the student nurse.

New Laws Sought to Provide More Adequately for the Insane

Legislation that is greatly needed in Indiana with respect to the state's care and treatment of the insane, is set forth in the recently published annual report for 1928 of the Board of State Charities:

The establishment of a state psychiatric hospital, preferably in connection with Indiana University Hospitals.

Extensions at the state hospitals whose present capacities do not exceed 1,500 patients, a part of this development to be in the form of farm colonies.

The establishment of reception departments, with mechanical equipment and trained staffs—physicians, nurses and attendants—for the reception, observation and intensive therapeutic treatment of patients.

The establishment of consulting staffs to be available in cases needing special treatment and care.

The development of clinical service, including out-patient and traveling clinics.

The employment of trained persons to aid in clinics and in furloughing patients.

Editorials

The High Cost of Sickness

RELIABLE statisticians state that the total annual cost of sickness to each man and woman in the United States is thirty dollars. Two-thirds of this amount represents the expense necessary to meet the individual's need for the service of doctors, nurses and hospitals.

Ten dollars per capita per annum, it is said, represents the loss sustained by industry and all forms of useful endeavor because of incapacity, due to sickness on the part of workers. Sickness is indeed expensive to the nation as well as to the individual.

There is another angle to the problem which has long been heatedly debated on the convention floor and in the hospital and lay press. There are those who place at the door of the hospital the whole blame for the not inconsiderable expense required to secure institutional care for the sick. It is implied that hospitals are commercial, heartless, that somewhere, somehow, unnecessary and extravagant charges are being inflicted on the patient, that ruthless measures are being taken to swell the hospital coffers. If the careless talk of the uninformed were to be given credence, the hospital is an institution with nothing but an operating room and a treasurer's window, with the latter occupying the most prominent place in the physical and administrative arrangement. Medical societies, when other topics of discussion cloy the scientific appetite, are prone to attack the hospital system of charges and the general expense of securing institutional care.

Little unfavorable comment is heard relative to the quality or to the exorbitancy of the cost of ward treatment. When privacy and individual service are desired costs mount, much to the alarm of the patient and his relatives. Can and should hospitals furnish private room service which includes housing and food and what in many cases is a satisfactory degree of nursing attention in addition, for a rate less than the good hotel charges for a room alone? Moreover, the type of accommodation the hospital offers is a faithful reflection of the demands of the public. True it is that perhaps in many cases more semi-private rooms instead of wards should be available and it is probable that some type of service can be devised and adopted generally that will meet more adequately the requirements of the great but sometimes too much pitied middle class. Are not men and women of to-day too little able to foresee or too little inclined to provide for future personal and family needs? If eighty dollars per annum is necessary for the medical care of the average family, why should the need be actually at hand before saving therefor has begun?

It is but a manifestation of ignorance, bias or frank unfairness to imply that the hospital is wholly or even in any considerable degree to blame for this situation. It is a complex problem, involving matters as difficult as the construction of a new type of institution for the care of the sick clerk, teacher or other professional man, a problem as complicated as the psychologic reactions of alarmed friends and relatives who demand the best and then, when danger subsides, strenuously object to paying therefor. Fortunately in the near future light on this vexed subject may be expected from the Committee on the Cost of Medical Care. In the meantime, constructive criticism of the hospital and its efforts is not only an attitude of fairness but also one of wisdom.

Politics and Purchasing

MANY high grade business houses refuse to compete for the trade of governmental hospitals. This is more particularly true in the case of city, county and state institutions. The reason usually advanced by representatives of these firms for the adoption of such a policy is that it does not pay their principals to spend money preparing specifications and samples and entering bond guaranteeing the faithful adherence to the details of the agreement because unfair methods prevent the proper consideration of price and quality.

Is there any basis in fact for such serious charges? Are buying methods of governmental hospitals so honeycombed with political favors or even personal graft that honest merchants are justified in the adoption of such a plan? Inquiry among executives of county and city hospitals reveals not a little evidence that buying for these institutions is too often unbusinesslike and even at times tainted with suspicion of unfairness or even undoubted dishonesty.

Moreover, there are usually to be found in such situations the friends of politicians in places of power who are contenders for city or county business. In some instances the place holder himself is financially interested in a contracting or mercantile business and the ostensible head of

the firm is only a figurehead. Even the contract departments of firms usually considered ethical have at times with or without the knowledge of those in higher authority submitted unreasonably low bids for hospital furnishings, supplies and scientific equipment, hoping should the contract be secured, to bring about the acceptance, by the exercise of those devious and dishonest methods known to the unregenerate small politician, of inferior goods and hence to realize unearned profit.

Such practices are rather routine and usually follow this somewhat standard course. First, cheerful and high-sounding assurances of ability to deliver goods in accordance with specifications at an unheard-of low figure; next, doleful, almost lacrimose announcements of mill and factory strikes or shipping delays; then telephone calls from unexpected sources asking for greater delivery time and the quashing of time penalties and finally the receipt of shoddy improper goods.

Sometimes the need is so great that the executive is tempted to accept anything to get something with which to care for his patients. If he rejects these goods he may be covertly approached with an offer of political or financial reward for closing his administrative eyes to plainly evident defects. If he persists, thinly veiled threats of retribution for what is contended to be partiality to other bidders are made. If the hospital executive be of firm will and sound conscience he rejects with scorn any and every such approach. He demands in the name of his patients and of common decency the removal of improper goods and their replacement with articles corresponding to the specifications.

Delay after delay in so doing is the next stage of the farce-tragedy. Meanwhile rubber goods are leaking, drugs are running short, the patient is suffering and the public is criticizing the hospital and its personnel for evident faults of administration.

Unfortunately dishonest dealers are not alone in endeavoring to supply improper furnishings and surgical supplies. Food of uncertain antecedents, milk of low butter fat, frozen chickens, stale butter, ancient fish, all are at times delivered at the doors of the hospital by the conscienceless protégé of some politician in power. Here again is unmistakable evidence of the blighting effect of politics on the conduct of the hospital.

Powerful indeed is the hunger for dollars in the person of the politician. In the wake of this urge goes lying, deceit, a cumbersome cunning, a forgetfulness of all else but the desire for gain. And in the first and last analysis the helpless sick pay the price in prolonged nights and days of suffering, in delayed convalescence and even in extreme instances in loss of life itself.

No red blooded executive compromises the right, excuses crookedness in business, averts his eyes from dishonesty, avoids a contest with the shifty-eyed salesman who boasts of "friends at the front." When will astute political organizations in the great centers of population learn that from the political aspect alone hospital and health activities are a greater practical asset to them if properly and efficiently conducted than are the petty gains they return when selfishly exploited by the political meddlers. The slogan, "Hands off the hospital," should represent but a primary lesson to be copied many times a day in the rule book of the much heralded practical politician.

The Art of Holidays

AT BASE, physical man is still a savage. Mentally and perhaps spiritually he has adapted himself to civilization but if he is function efficiently, he must, from time to time, revert to the condition of nature from which he evolved. Human bodies require a return to sunlight and air and muscles that have atrophied from remaining unused must be rebuilt by exercise.

There is more to this than the physical, there must be a coincidental mental change. Our progenitors were nomads and the annual urge to go traveling arises from an actual need for a shift of environment, manifesting itself in an intense desire to get away from the pursuit of money, learning and pleasure. Our bodies cry out for relaxation from clothes and conventions; muscles pampered by soft living yearn for the stimulation of a harder existence.

The art of holidays lies therefore in making them a rural antitoxin for the toxins of urban existence, care being taken that the reaction is pleasant and gradual, never severe. The sedentary hospitaler cannot go off the deep end of physical exertion. He must start in shallower waters and gently increase the strain upon a body too often made flabby by the office chair. Hearts must be gradually accustomed to an increased strain; never must they be fatigued.

The art of a holiday consists in getting the most out of it. Unfortunately our professional duties do not permit of prolonged leaves of absence. Therefore, in order to get the most out of a holiday, it is wise to put the body into such a condition that it can withstand the holiday exertion. The wise person exercises a certain amount each day—setting-up exercises before breakfast, walks

in the afternoon and evening, a golf game when time permits. Such a person can meet his changed environment with zest and avail himself of his leave to the utmost.

Change of environment—that's the big idea. For a hospitaler to go visiting other hospitals is about as sensible as a walking tour for a postman. For him to chain himself to a fixed itinerary and an elaborate schedule of sight-seeing is equally foolish. A real holiday is getting away from responsibility and, like the fairy woman, Niav of the Shee, who carried away the legendary Irish hero, Ossian, to the far-off country of Tir-nan-oge, the Land of Youth, it will revivify minds and bodies and souls and stimulate the tired hospitaler in his service to mankind.

Talking It Over

OUR Constitution was signed on September 17, 1787. As nations go, 142 years does not seem any great age for such a document but ours is the oldest constitutional government in existence. Our national anthem, "The Star Spangled Banner," was written 114 years ago the fourteenth of this month. By a strange irony of fate, it was set to the tune of an old drinking song.

* * *

OUR ancestors, who made many wise observations, coined an adjective, "bone-idle," to denominate constitutional laziness. Ambition and a desire to work are normal traits and psychologists claim that persons in whom these are lacking are abnormal. Thus the person who trifles away his time and opportunities, even though he may have a superior mentality, does so because he is constitutionally inadequate; he can't help it; his idleness is bred in the bone. Many such persons pass through hospitals annually. Some of them are really charming people; some are annoying patients. Our charity toward them should increase with the realization that they are as they are made.

* * *

WHAT about the patient who has no English? If there is a lonely feeling in the world, it is that of being sick in a hospital where no one can talk one's language. It is not enough to have interpreters; what the patient wants is somebody to talk to, to confide in. The social worker should have a roster of volunteers who will undertake this service. It boosts hospital morale.

* * *

GAMBLING in the hospital is a constant problem where male patients predominate. TALKING IT OVER will confer the Order of Meritorious Diplomacy on the inventor of a sure-fire control method.

* * *

SUFFICIENT time has elapsed to permit the mental digestion of Mr. Embree's remarks at the A.H.A. banquet, uninfluenced by the witchery of his personality. Those of us who were fortunate enough to hear him felt that it was a splendid address; that beneath the cloak of facetiousness with which he clothed his remarks there was an infinitude of courage and a world of common sense. One of the reasons that hospitals have not come in to their own as a basic part of community life is the fact that they bear the stigma of charity—frequently misplaced. People do not respect organizations that must perpetually beg in order to make up deficits. The general public may apparently blunder along but in the final analysis it is the wisest thing on earth and private room patients who have to pay high fees in order that charity may be extended to somebody else bear a resentment against the hospital administration. There is an even bigger point than this. If the entire community has to pay in its tax levies for the treatment of avoidable disease and injury, it will not be long before it installs the machinery of disease and accident prevention so that the community bill may be lowered. It is cheaper to prevent the venereal diseases than it is to cure them. It is more economical to hold the reckless automobile driver in leash than it is to patch up the bodies he has broken. It is to be hoped that somebody made a transcript of Mr. Embree's remarks and that steps will be taken to circulate them throughout the profession of hospital medicine. Anyhow, his address was inspiring, it was thought-provoking, full of chuckles and loaded with sense.

* * *

TO PARAPHRASE an old proverb, "A new blade shaves clean." This does not necessarily mean that the new employee lets down in trying; it may signify that the keen edge of the mind has been dulled against routinism and the disappointment that comes from unappreciated, unseconded effort. If the blade is not sharp at first, a mistake has been made in selection; if it is not kept sharp, the administrator may have failed in his attention to it. Microscopists tell us that a razor blade has teeth like a saw and that in order to function properly, these teeth must be properly "set," that is, kept at a proper and uniform angle; one tooth out of line will make the blade "pull," therefore it must be honed and stropped. This is exactly what the good administrator does with his employees; by inspiration, by recreation and by character building, he keeps the human instruments that compose his armamentarium well "set" for their functions.

* * *

THE exhumation of the skull of Desiderius Erasmus is a demonstration of the lack of relation between brain weight and mental capacity. Born in Rotterdam in 1467 and buried in Basle in 1536, his bones lay undisturbed until recently when alterations in the cathedral made their temporary removal necessary. Measurements of his skull made at that time showed that this supreme example of cultivated common sense had a brain that weighed 100 grams less than that of the average Caucasian. Even in brains it's quality, not quantity, that counts.

* * *

THE report of the Airway Marking Committee recently issued by the Department of Commerce appeals to the imagination. Future hospital architects must plan hospital roofs so as to display aerial signs which will read "HOSP" followed by a letter indicating the hospital's specialty, for example, F for fractures, D for dipsomaniac and O for obstetrics!

* * *

THE first use of electricity for a strictly medical purpose is believed to have been in 1743, when Kratzenstein, professor of medicine at Halle, treated a case of palsy by this means.

YOUR EVERYDAY PROBLEMS

A department devoted to the informal discussion of problems arising in the everyday life of the hospital superintendent.

[No attempt has been made to offer final conclusions relative to the questions considered in this department. THE MODERN HOSPITAL will gladly welcome further comment by its readers on any of these problems, or the presentation of other queries for discussion in later issues. —Editor.]

How Can the Stoppage of Operating Floor Drains by Plaster of Paris Be Prevented?

This question was asked by the superintendent of an institution in which repeated difficulty had been experienced in clearing cast room floor drains that had been stopped by plaster of Paris refuse.

The first step to be taken in the prevention of this difficulty is to urge care in handling of plaster of Paris, on the part of those applying casts. It would seem unnecessary for an operating room floor to be grossly soiled in this way, particularly since the use of prepared plaster of Paris bandages is becoming so general.

The cast table, if properly constructed, makes possible the collection of all refuse material in a container, either set under or at the end of the table. Sometimes a rubber mackintosh is useful for this purpose. The cast room should be especially equipped with a trap so that drains can be readily cleared without allowing waste material to reach the main sewer. Cast sinks are usually equipped with a trap that readily and efficiently serves this purpose. Calcium salts can be kept in solution by the use of certain substances that enter into chemical combination with them to facilitate their passage through the drains. Sodium citrate is often used in softening a cast so it can be easily removed.

The answer to this question largely lies in using as a cast room one in which no floor drains exist, in urging and requiring tidiness on the part of the surgeon, in using chemicals to prevent hardening of the calcium in pipes or in placing a trap under the operating room floor that can be readily and frequently cleared.

How Can the Rule Requiring the Recording of Preoperative Chest and Urine Examinations Be Enforced?

It is disturbing to many hospital administrators to experience the difficulty that often arises in the enforcement of this common sense and most necessary preoperative precaution. It would appear that members of the visiting surgical staff should be active in enforcing such a rule because of a firm conviction that it is preeminently fair to the patient. But the chief antagonist, passive if not active, to the rigid enforcement of this rule is often the visiting surgeon himself.

It is usually necessary, therefore, for some resident officer to reassure himself that a careful urinalysis has been made within the twenty-four hours prior to the operation and that a physical examination of the chest has been carefully made before the patient is permitted to be sent to the operating room.

When visiting surgeons are careless or overconfident, this state of mind frequently is reflected in the intern's attitude. The absence of a recent urinalysis, however, is not always his fault. The specimen may not have been taken on time. It may have been lost in transit. The report may have been mislaid and, as a result of any or all of these happenings, an embarrassing impasse may arise in the operating room that is most distressing to all concerned.

Here enters the hospital's obligation to provide proper machinery for the prompt and efficient performance of preoperative laboratory work. If this is not done, then it is unfair to require a rigid adherence to this rule. If, however, the visiting surgeons have become accustomed to sending patients for major surgical procedures to the hospital only a few hours prior to the time scheduled for the operation, then they must take full responsibility for whatever embarrassing situations may arise.

If our institutions are failing in any one matter connected with the performance of good surgery, it is that too scant time and attention are being given to preoperative study and preparation.

Preoperative Study Essential

It is distinctly unfair to any patient to allow the administration of a general anesthetic, except in the case of an unusual emergency, until a thorough study of the physical state of the patient and a careful prognostication of his reaction to a prolonged surgical procedure have been made. The superintendent should arrange for a proper technique, and should see to the performance of the prescribed steps in every instance in which a general anesthetic is given.

It is not a matter of question, however, whether this rule should not apply to major procedures performed by the aid of a spinal anesthetic. The interns must be informed of this rule and warned that it will be rigidly enforced. The chief must bear his responsibility in seeing that he does not make the enforcement of the rule difficult.

The resident supervisory medical officer should be required to certify that the case has been properly prepared before it is sent to the operating room. This evidence can be best presented by a signed certificate that should appear on the front of the chart accompanying the patient.

No rules apply when the life of the patient is in danger, but of equal certainty is the fact that no subterfuge should be permitted on the part of any person in labeling a nonemergent case one that requires immediate attention for the sole and only purpose of circumventing what is certainly a proper institutional rule.

What Curative and Preventive Laboratory Work Should Be Done in the Admitting Ward?

One of the functions of the admitting ward of the hospital is to serve as a station of inspection to prevent the entrance of patients suffering from contagious or infectious conditions. A most careful inspection of the bodies of all patients, a careful nose and throat examination and the taking of cervical smears in an effort to prevent the entrance of vaginitis into the hospital are but a few of the routine measures that should be carried out in the receiving ward. Throat smears should be taken on all patients that present any suspicious diphtheritic signs. However, it is questionable from a practical standpoint whether in the absence of symptoms, all throats should be cultured as a matter of routine. It is a well known fact that there are many atypical or diphtheroid organisms which at times are reported positive with resulting unnecessary and expensive quarantines.

In some hospitals routine vaccination against smallpox is performed on all admissions. A patient should not be permitted to remain any considerable length of time in the receiving ward although overnight alcoholics may be one exception. A person admitted in coma with hypertension may be bled, or the blood of a patient with coma of an indetermined origin might be studied for an excess of blood sugar or his urine examined for casts and albumin.

If the accident ward is conducted in conjunction with the receiving ward, emergency treatment for poisoning as well as minor surgical procedures may be carried out there. If the receiving ward is properly conducted, it should prevent in large measure the contamination of hospital wards and rooms. It need only be added that it is impossible to detect the presence of a contagion in the incubation stage.

What Procedures Should Nurses Be Permitted to Perform?

There appears to be no uniform recognition of the dividing line between the procedures the intern or resident physician should carry out and those the nurse may be permitted to do.

In an Eastern hospital the question arose as to whether a nurse should be permitted to pass a duodenal tube or whether this should be done only by the physician. This is but one of the procedures that have given rise to this or a similar query many times in the past. In the diabetic clinic, shall the nurse be permitted to take samples of blood for study? May she perform duodenal or gastric drainage in the gastro-intestinal clinic, or administer intramuscular injections of bismuth or arsenic in the venereal clinic, or insert needles for hypodermoclysis in the wards? Some hospitals permit nurses to perform this type of work. Others do not.

This problem has two aspects: Is the nurse capable of performing the above mentioned steps with the same skill and with a minimum degree of discomfort on the part of the patient that would be the case if the physician only were allowed to do this work? What would be the moral. if not the legal standing of the hospital in the eyes of the community should a serious accident befall the patient while any of these usually considered minor procedures was being performed by the nurse?

It may be said in answer to the first question that many nurses have become as adept as the average physician in the passing of duodenal tubes and in inserting needles into veins. Nevertheless, her training does not prepare her for this type of work nor does it seem fair to the public to permit her to do it. There seems to be no reason why in a hospital with a proper intern staff the nurse should insert a hypodermoclysis needle or in the properly run diabetic clinic why the medical personnel should be so scanty that this work must be delegated to the nurse.

In some institutions it has been found that since the diabetic clinic convenes at seven or eight o'clock in the morning, it is usually much easier to get this work done by a nurse than by an intern. A hospital would be in a rather unpleasant situation should death occur during the passage of a tube by a nurse, either as a result of the effect of vomiting on a disabled heart or even the insertion of the tube into the trachea.

It may be said that the nurse has sufficient work to do without asking her to perform work that should be done by the physician. In addition, it is the duty of hospital executives to require each member of the institution's personnel to perform only that type of work for which he or she is best fitted.

When an Intern Serves Two or More Chiefs, Which Has Priority If They Should Wish to Make Rounds at the Same Time?

In the intern schedule of most hospitals it is necessary for the same intern to serve the patients assigned to more than one chief. This system results in a situation that is irritating to the chief who cannot understand why his rights are not being protected when he cannot see his intern. It is also disturbing to the intern who is blamed for a situation over which he has no control.

It is sometimes possible for the hospital administrator, in planning the intern schedule, to arrange the visits of staff physicians so that they do not coincide. This can usually be done after a conference at which the visiting physicians concerned are in attendance. If the matter is fully and frankly explained as to the necessity for assigning the same intern to two or more services, less friction will be likely to arise than if the physician is allowed to learn, purely by chance, the reasons for the intern's absence.

When it is impossible for staff physicians to alter their accustomed routine so that their hospital visits do not conflict, good sportsmanship frequently prompts the casting of lots, or, in some other amicable way brings about the acceptance of a less favorable hour by one of the physicians.

It is sometimes a good scheme to list staff members according to their seniority. When this is done, matters of individual preference as to time of service, hours of visiting, priority as to intern's attendance as well as the scheduling of operations are rather easily settled by allotting to the senior physician such privileges and advantages as his long term of service warrants. If it should happen that the two physicians concerned are of equal rank from the standpoint of service, then the decision may be made by the tossing of a coin by the superintendent himself.

It is the duty of the hospital executive, moreover, to protect the standing of the intern with his chief. It is not fair for the intern to be blamed for an absence or inattention of which he is not guilty.

It is usually the custom for operating room calls to take precedence over house rounds when applied to the presence of the intern.

Sometimes local institutional rules aid in solving this problem. The superintendent's judgment, however, as to the adoption of a scheme that will bring about the greatest good to the greatest number should be the final consideration in the solution of this difficulty.

NEWS OF THE MONTH

Program Announced for Hospital Standardization Conference

The twelfth annual Hospital Standardization Conference of the American College of Surgeons will convene at the Stevens Hotel, Chicago, October 14, for a four-day convention. During the same four days the Association of Record Librarians of North America will hold its annual meeting, the two groups assembling for a number of joint sessions.

The program announced for the Hospital Standardization Conference calls for the registration of delegates between 8 and 9:30 o'clock Monday morning. The first session will open at 9:30 with Dr. Franklin H. Martin, Chicago, president of the conference, presiding. The address of welcome will be given by Dr. Arnold H. Kegel, commissioner of health, Chicago. Surgeon-General Merritte W. Ireland, Washington, D. C., and president-elect of the American College of Surgeons, will introduce distinguished guests and representatives of national organizations, followed by the presentation of the official report of hospital standardization and the list of approved hospitals for 1929, by Doctor Martin.

Addresses to be given at the morning session will include the following: "The Place of the Hospital in the Public Health Program," Dr. Edwin S. Embree, Chicago, president, Julius Rosenwald Fund; "The Relationship Between Medicine and Its Aids," Rev. Alphonse M. Schwitalla, S.J., dean, St. Louis University School of Medicine and president, Catholic Hospital Association; "The Hospital Administrator," Dr. Christopher G. Parnall, superintendent, Rochester General Hospital, and president, American Hospital Association; "The Value and Importance of the Hospital Out-Patient Department," Dr. Irving S. Cutter, dean, Northwestern University Medical School and superintendent, Passavant Memorial Hospital, Chicago.

Viewpoint of Hospital Officials

Monday afternoon Dr. W. W. Pearson, Des Moines, Iowa, vice-president of the conference, will preside for a session for which the following addresses and discussions are scheduled: "The Superintendent's View of the Nursing Problem," Paul H. Fesler, superintendent, University of Minnesota Hospital, Minneapolis, Minn., discussion led by Adda Eldredge, R.N., Madison, Wis., director, Bureau of Nursing Education for Wisconsin; open forum discussion, "How Can We Assure Efficient Nursing Care of the Patient?" led by E. Muriel McKee, superintendent, Brantford General Hospital, Brantford, Ontario, and Sister Helen Jarrell, superintendent of nurses, St. Bernard's Hotel Dieu Hospital, Chicago; "Staff Conferences," Dr. Walter S. Goodale, superintendent, Buffalo City Hospital, Buffalo, N. Y.; discussion led by Dr. John T. Burrus, surgeon, High Point Hospital, High Point, N. C.; demonstration of a model staff conference by the staff of Ravenswood Hospital, Chicago.

Dr. Joseph C. Doane, medical director, Jewish Hospital, Philadelphia, will preside at the Tuesday morning meeting when the following papers will be presented: "The Accrediting of Surgical Deaths," Dr. Ernest Leroi Hunt, director of surgical services, City Hospital, Worcester, Mass.; discussion led by Dr. John de J. Pemberton, assistant professor of surgery, Mayo Foundation, University of Minnesota Medical School, Rochester, Minn; symposium, "The Control and Elimination of Infections in Hospitals"; "Hernia Operations as an Index of Hospital Infections," Dr. Charles N. Combs, superintendent, Union Hospital, Terre Haute, Ind.; discussion led by Dr. Southgate Leigh, visiting surgeon and gynecologist, Sarah Leigh Private Hospital, Norfolk, Va.; "How Can We Determine the Efficiency of the Surgical Mask?" Dr. Irving J. Walker, clinical professor of surgery, Harvard University Medical School, Boston; "How Can We Assure the Sterility of Catgut?" Dr. Frank L. Meleney, department of surgery, Columbia University, New York City; "Plumbing in Hospitals as a Source of Infection, and Proposed Safeguards," Dr. Arnold H. Kegel, Chicago, commissioner of health; discussion led by Charles F. Neergaard, trustee, Carson C. Peck Memorial Hospital, Brooklyn, and hospital consultant.

Health Inventorium

Another series of addresses and discussions will be held at the afternoon session when Dr. Walter H. Conley, general medical superintendent, Department of Public Welfare, New York City, will preside. The scheduled addresses include: "The Health Inventorium in the Standardized Hospital," Dr. Franklin H. Martin, Chicago; open forum, "Administrative Problems Relating to the Care of the Patient," conducted by Robert Jolly, superintendent, Baptist Hospital, Houston, Tex., and trustee, American Protestant Hospital Association; "What Should Be the Hospital Trustee's Responsibility for the Care of the Patient? How Can the Hospital Trustee Know When the Patient Is Receiving Efficient Hospital and Medical Service?" Louis J. McKenney, chairman, board of trustees, Highland Park General Hospital, Highland Park, Mich.; discussion led by Dr. John D. Spelman, superintendent, Montefiore Hospital, Pittsburgh; "What Factors Enter Into an Efficient Operating Room Service?" A. C. Galbraith, superintendent, Toronto Western Hospital, Toronto, Canada; discussion led by Maj. G. Seelig, M.D., professor of clinical surgery, Washington University School of Medicine, St. Louis; "The X-Ray Department in Hospital Management," Dr. John E. Daugherty, superintendent, Jewish Hospital of Brooklyn; discussion led by Dr. Edward S. Blaine, radi-

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ologist, Wesley Memorial Hospital, and director, National Pathological Laboratories, Chicago; "How Can Standardization Help the Small Hospitals?" speaker to be announced; "What Is Being Done to Assist the Person of Moderate Means in Securing Adequate and Efficient Hospital and Medical Service?" Dr. Michael M. Davis, director for medical services, Julius Rosenwald Fund, Chicago; discussion led by Herman L. Fritschel, superintendent, Milwaukee Hospital, Milwaukee, Wis.

Joint Session With Librarians

Wednesday morning the conference will hold a joint session with the Association of Record Librarians of North America. In the afternoon the following program will be presented: open forum, "Professional Problems Affecting the Care of the Patient," conducted by Dr. Lewis A. Sexton, superintendent, Hartford Hospital, Hartford, Conn., and president-elect, American Hospital Association; "Standardization of Surgical Dressings and Materials—Final Report," Dr. Frederic H. Slayton, director, Hospital research and information department, American College of Surgeons, Chicago; discussion opened by Dr. Hugh Scott, medical officer in charge, U. S. Veterans' Hospital, Maywood, Ill.; "What Constitutes an Efficient Clinical Laboratory Service for a Hospital?" Dr. Frank W. Hartman, pathologist, Henry Ford Hospital, Detroit; discussion opened by Dr. Oliver W. Lohr, director, Central Laboratory of Saginaw, Saginaw, Mich.; "What Constitutes an Efficient Anesthesia Service for a Hospital?" Dr. Wesley Bourne, Montreal; discussion opened by Dr. Isabella Herb, chief anesthetist, Presbyterian Hospital, Chicago; "A Plan for Increasing the Number of Autopsies," Maurice Dubin, former superintendent, Mt. Sinai Hospital, Philadelphia; discussion opened by Dr. Frank J. Novak, Jr., oto-laryngologist, Lake View Hospital, Chicago; "The Need for Consultations in the Care of the Seriously Ill," Dr. George W. Swift, brain surgeon, Children's Orthopedic and King County Hospitals, Seattle, Washington; discussion opened by Frank H. Lahey, surgeon, New England Deaconess and New England Baptist Hospitals, Boston.

The entire Thursday morning session, conducted by Dr. Malcolm T. MacEachern, Chicago, director of Hospital Activities, American College of Surgeons, assisted by Robert Jolly, and other hospital officials, will be devoted to the discussion of questions and problems presented from the floor and not discussed in previous sessions. In addition, opportunity will be given for presentation and discussion of new features in hospital planning, construction, equipment and procedures.

In the afternoon there will be practical demonstrations in hospital planning, construction, equipment, administration and procedures in a number of Chicago hospitals.

Friday morning and afternoon there will be conferences on traumatic surgery, when many interesting features of hospital care of the injured will be presented.

The convention will come to a close Friday evening with the annual convocation of the American College of Surgeons.

The detailed program for the annual session of the Association of Record Librarians of North America has been announced as follows:

Monday will be devoted to two sessions of the Hospital Standardization Conference, with registration of delegates from 8 to 9:30 a.m., and morning and afternoon meetings from 9:30 to 12:30 and from 2 to 5 o'clock.

At 8 p.m. the formal opening of the Clinical Congress, American College of Surgeons, will be held.

The record librarians will assemble for their first meeting at 10 o'clock Tuesday morning following registration. Mrs. Grace W. Myers, librarian emeritus, Massachusetts General Hospital, Boston, and president of the librarians' organization, will preside. The address of welcome will be given by Dr. Malcolm T. MacEachern, Chicago, director of hospital activities, American College of Surgeons. Greetings from the Chicago and Cook County Record Librarians' Association will be extended by Mrs. Jessie Harned, Chicago, president, followed by the president's address by Mrs. Myers.

Association business, including reports of committees, officers and local associations will conclude the morning session.

In the afternoon Zulu Morris, Chicago, chairman of the committee on standards, Chicago and Cook County Record Librarians' Association, will speak on "The Training of the Record Librarian." Courses for record librarians with special reference to the Byrn Mawr experiment will be discussed by Frances Benson, librarian, Bryn Mawr Hospital, Bryn Mawr, Pa.

"The Need for a Central Registry of Courses for Record Librarians," will be the subject of an address by Matthew O. Foley, Chicago, managing editor, *Hospital Management*. This will be followed by a general discussion led by Betty Gray, record librarian, Knoxville General Hospital, Knoxville, Tenn., and by a round table conference and question box conducted by Mrs. Clara A. Doolittle, record librarian, Griffin Hospital, Derby, Conn., and president, Connecticut Hospital Historians' Association.

At the evening session there will be a demonstration and discussion of the record system of the new Columbia-Presbyterian Medical Center, New York City, for which the speakers will be announced later.

Filing System Will Be Described

Mrs. Genevieve Chase, chief record librarian, Massachusetts General Hospital, Boston, will speak on "Fundamental Principles to Be Observed in Developing an Efficient Cross Index and Filing System," and Mrs. Huldah H. Ainsworth, librarian, Hospital for the Ruptured and Crippled, New York City, will speak on "Innovation in Diagnoses and Terminology to Facilitate the Answering of Requests for Histories and the Recording of Clinical Histories." A general discussion of these subjects will be led by Mrs. Enna C. Black, historian, Grace Hospital, New Haven, Conn.

Wednesday morning, Dr. R. C. Buerki, superintendent, State of Wisconsin General Hospital, Madison, Wis., will preside at a joint session of the librarians and the Hospital Standardization Conference when a symposium on "Increasing the Efficiency of Case Records" will be held. Among those participating and the subjects they will present are: "The Rôle of the Record Librarian in Maintaining an Efficient Record System in a Hospital," Florence G. Babcock, record librarian, University of Michigan Hospital, Ann Arbor, Mich., discussion led by Dr. C. W.

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Munger, superintendent, Grasslands Hospital, Valhalla, N. Y.; "Maintaining Efficient Case Records in an Open Hospital," Marjorie Boulton, record librarian, Jewish Hospital, St. Louis; discussion led by Dr. Donald C. Smelzer, superintendent, The Charles T. Miller Hospital, Inc., St. Paul, Minn.; "Methods in Record Work Peculiar to a Large Clinic," Mabel C. Root, director of record department, Mayo Clinic, Rochester, Minn.; leader of the discussion to be announced; "The Correlation of the Record Department and Medical Library in the Hospital," Mrs. Stella F. Walker, director, literary research department, American College of Surgeons, Chicago; discussion led by Mrs. Maurine Wilson, record librarian, and Marguerite Simmons, medical librarian, Ravenswood Hospital, Chicago; "The Nurse's Contribution to the Medical Record," Dr. T. R. Ponton, superintendent, Illinois Masonic Hospital, Chicago; discussion led by Laura R. Logan, R.N., dean, Illinois Training School for Nurses, Chicago; general discussion opened by Edith M. Robbins, chief record librarian, Peter Bent Brigham Hospital, Boston.

In the afternoon there will be a round table conference and question box conducted by Lucille Bresson, record librarian, Children's Memorial Hospital, Chicago, and secretary, Chicago and Cook County Record Librarians' Association, and Mrs. Emma J. Whipple, librarian, Albert Merritt Billings Hospital, University of Chicago.

The annual banquet will be held Wednesday evening with E. S. Gilmore, superintendent, Wesley Memorial Hospital, Chicago, presiding at the after-dinner program. Speakers will include Dr. Christopher G. Parnall, medical director, Rochester General Hospital, Rochester, N. Y., and president, American Hospital Association, who will give an address on "What the American Hospital Association Expects of the Record Librarian"; Dr. C. P. Colwell, secretary, Council on Medical Education and Hospitals of the American Medical Association, Chicago, who will speak on "What the Council on Medical Education and Hospitals Expects of the Record Librarian"; Dr. T. H. Ponton, whose subject will be "Case Records—A Forecast"; and Robert Jolly, superintendent, Baptist Hospital, Houston, Tex., who will have as his subject, "What Are You Going to Do About It?"

Another symposium will be held Thursday morning, with Mrs. Myers presiding. The relation of the record librarian to the following medical and hospital departments will be discussed: "The Superintendent," E. Muriel McKee, R.N., superintendent, Brantford General Hospital, Brantford, Ontario; "The Medical Staff," Dr. Ernest Leroi Hunt, surgeon and director of surgical services, City Hospital, Worcester, Mass.; "The Nursing Department," Mrs. Nan Ewing, R.N., superintendent of nurses, Ravenswood Hospital, Chicago; "The Business Department," Clarence H. Baum, superintendent, Lake View Hospital, Danville, Ill.; "The Clinical Laboratory," Dr. J. J. Moore, director, National Pathological Laboratories, Chicago; "The X-Ray Department," Dr. James T. Case, radiologist, Passavant Memorial Hospital, and professor of radiology, Northwestern University, Chicago; "The Anesthetist," Dr. Isabella Herb, chief anesthetist, the Presbyterian Hospital, Chicago; "The Dietitian," Anna E. Boller, Central Free Dispensary, Rush Medical College, Chicago, and president, American Dietetic Association; "The Social Worker," Helen Beckley, executive secretary, American Association of Social Workers, Chicago.

A general discussion of these addresses will be led by Jessie M. Morris, record librarian, Butterworth Hospital, Grand Rapids, Mich.

Demonstrations of the work done in case records and filing system departments in a number of Chicago hospitals will be given at the afternoon session.

A clinic on the "ills of case records" will be conducted by Dr. Malcolm T. MacEachern and Mr. Jolly, assisted by record librarians from Chicago hospitals, at the evening meeting.

Mrs. Doolittle will conduct a round table conference and question box at the Friday morning session after which the final business of the association will take place, including the election and installation of officers.

The concluding addresses will be given by the retiring and incoming presidents.

Delegates will be taken on sightseeing trips to interesting points in and about Chicago Friday afternoon and the convention will come to a close Friday evening with the convocation of the Clinical Congress of the American College of Surgeons.

Indiana to Join Meeting of Illinois and Wisconsin Associations

Arrangements have been made for a joint meeting of the Hospital Association of the State of Illinois, the Wisconsin Hospital Association and the Indiana Hospital Association to be held at the Palmer House, Chicago, February 19, 20 and 21. These dates were chosen because they dovetail with the dates of the Annual Congress of Medical Education, Medical Licensure and Hospitals, American Medical Association, which will be held at the Palmer House on February 17, 18 and 19.

In addition to these two hospital meetings, it is expected that the Methodist Homes and Hospitals will hold their meeting in Chicago during that week and that there will be a meeting of the executive committee of the American Protestant Hospital Association as well as the regular meeting of the trustees of the American Hospital Association.

An invitation has also been sent to the Michigan Hospital Association to join in this February meeting.

During the past two years the Illinois and Wisconsin organizations have met together with an attendance of more than 300 at each session. With the Indiana State Association and the other meetings being held this week, it is expected this year that the attendance will go close to 500.

President J. W. Meyer of the Hospital Association of the state of Illinois has appointed Dr. Malcolm MacEachern, associate director, American College of Surgeons, chairman of the program committee for the Illinois meeting, and the plan will be to hold separate meetings of the various units on February 19 and join for one meeting for the last two days. Doctor MacEachern is outlining a program that will consist of speakers from all of the units represented, as well as many of the nationally known hospital people who will be in attendance at the meeting.

Personals

WILLIAM B. SELTZER, assistant superintendent, Mt. Sinai Hospital, Philadelphia, has been promoted to the superintendency of the hospital, succeeding MAURICE DUBIN, resigned.

WINNIE COXE has become superintendent of The Women's and Children's Hospital, Chicago, succeeding MARION SMITH.

AMY E. BIRGE, in charge of admissions at Strong Memorial Hospital, Rochester, N. Y., the past three years, has been appointed superintendent of the Holyoke Hospital, Holyoke, Mass.

MARGARET I. COLLISON, supervising nurse, Maryland General Hospital, Baltimore, for the past six years, has been chosen as superintendent of the Baltimore Eye, Ear and Throat Hospital. She succeeds MISS A. E. CARROLL.

FAYE LOCKHART, R.N., has resigned as superintendent of the Ellsworth Hospital, Ellsworth, Kan., because of illness.

WILHELMENA KAPITEYN, formerly with the Blodgett Memorial Hospital, Grand Rapids, Mich., has been appointed superintendent of the Elizabeth Hatton Memorial Hospital, Grand Haven, Mich. She succeeds MRS. ADA MILLER, who has become superintendent of the Bellaire City Hospital, Bellaire, Ohio.

MADELINE KEMP, assistant superintendent, Baptist Memorial Hospital, Memphis, Tenn., has been selected as the new superintendent of the Jane M. Case Hospital, Delaware, Ohio. She succeeds MISS DAILY.

EDITH F. BENNETT, R.N., has accepted the superintendency of the Amesbury Hospital, Amesbury, Mass. MISS BENNETT formerly was superintendent of the Choate Memorial Hospital, Woburn, Mass., but has spent the past year in special hospital work.

DR. RICHARD W. CORWIN, Pueblo, Colo., chief surgeon for the Colorado Fuel and Iron Company, died June 19. The company has changed the name of the Minnequa Hospital to the Corwin Hospital as a memorial to the doctor who gave his services to the company from 1881 to 1929. DR. WILLIAM SENGER, assistant chief surgeon under DOCTOR CORWIN, has been appointed chief surgeon.

ELSIE SANDBERG, St. Paul, Minn., has become superintendent of the Shelby Community Hospital, Shelby, Mich. She formerly had charge of a private hospital at St. Croix Falls, Wis.

MARTINA C. THODE, R.N., has resigned as superintendent of the Clarkson Memorial Hospital, Omaha, Neb., to become superintendent of the Sterling Public Hospital, Sterling, Ill.

DR. ALBERT E. BROWNRIGG has been appointed medical officer in charge of the United States Veterans' Hospital No. 105, North Chicago, Ill., succeeding DR. E. P. BLEDSOE, resigned. DOCTOR BROWNRIGG formerly was with the United States Veterans' Bureau Diagnostic Clinic, Washington, D. C.

DR. J. L. MCELROY has assumed the duties of director of hospitals of the Medical College of Virginia, Richmond, Va. DOCTOR MCELROY formerly was connected with St. Luke's Hospital, Chicago.

K. FRANCES VAN CLEVE, superintendent, Southside Community Hospital, Farmville, Va., since its opening eighteen months ago, has resigned.

ANNE CARLTON, R.N., formerly superintendent of the Visiting Nurse Association, Wickliffe, Ohio, has been appointed superintendent of The Community Hospital, Beloit, Kan.

DR. H. B. ANDERSON, formerly director of Ayer laboratory, Pennsylvania Hospital, Philadelphia, is now acting superintendent of the Conemaugh Valley Memorial Hospital, Johnstown, Pa., where he has served as pathologist and medical director for the past seven years. DOCTOR ANDERSON is temporarily filling the vacancy left through the resignation of WILLIAM J. FINN, now superintendent of the Memorial Hospital, Cumberland, Md.

DR. CLEMENT R. MONROE, Baltimore, has been elected superintendent of the new Moore County Hospital, now under construction near Pinehurst, N. C.

MRS. DONNIE HALL BASS has been chosen superintendent of the Patton Memorial Hospital, Hendersonville, N. C., to succeed the late ELIZABETH CAMP.

MRS. FLORENCE THOMPSON, R.N., formerly superintendent of Ellsworth Hospital, Iowa Falls, Iowa, has become manager of the West Frankfort Union Hospital, West Frankfort, Ill. She will take over the duties of DR. J. E. WILLIAMS, who has acted as both manager and chief surgeon. Because of the press of work DOCTOR WILLIAMS found it advisable to give up the managerial work and will continue only as chief surgeon.

MAUD E. WISE has been appointed as superintendent of the Litchfield County Hospital, Winsted, Conn., succeeding HELENA L. READ, resigned. MISS WISE has been for some time with the Protestant General Hospital, Baltimore.

MAJ. R. H. STANLEY, chief of the National Military Home Tuberculosis Hospital, Dayton, Ohio, for the past five years, has resigned to become superintendent of the Montgomery Memorial Hospital, Montgomery, Ala. MAJOR STANLEY, who was formerly with the Milwaukee Military Home, submitted his resignation from the United States Army at the time of his withdrawal from the Tuberculosis Hospital. MAJ. CLARENCE KENNEY, Sawtelle, Calif., head of the tuberculosis section of the Pacific branch of the National Military Home, has been ordered to assume the duties of superintendent at the Dayton hospital.

ANNIE HILLCOAT, R.N., has been named superintendent of the New Highland View Hospital, Amherst, Nova Scotia. She fills the vacancy left through the resignation of MRS. BERTIE BARKER.

News of the Month

Anonymous Gift Brings Many Donations to British Hospital Fund

Following the recent donation of $500,000 to the King Edward's Hospital Fund, made anonymously by a loyal subject who wished to express gratitude for the recovery of King George, other Britishers have adopted the idea and are making contributions to the fund, states an article in the *Hospital, Medical and Nursing World.*

Special arrangements are being made under which particular contributions will be used for the purchase of radium. Half of the funds donated by members of the royal family will be so used. King George gave $5,000; Queen Mary, $2,500, and the Prince of Wales, $1,000.

Signifying the king's appreciation of the thoughtfulness of the donor who started the present contributions, Lord Stamfordham, private secretary to the king, wrote recently:

"The king's illness has brought home to him more clearly than ever before the resources of modern medicine and the value of devoted nursing. Medical science owes much of its development to great hospitals, which also contribute an admirable training ground for the nursing profession.

"King Edward's Hospital Fund was started by Edward VII in 1897, and makes grants to some 180 hospitals and other institutions. When the fund was started the objective was $500,000 a year. Last year the amount received totaled more than $1,250,000."

"Peter Pan" Royalties Given to London Children's Hospital

The sick children of London will benefit, in years to come, from the generosity of Sir James Barrie, who has given over unconditionally all his rights to royalties from his famous play "Peter Pan," to the Hospital for Sick Children in Great Ormond Street.

It is estimated that the gift will add about $10,000 a year to the hospital's income.

And just to start a good example for other folk who may wish to follow suit, the "first pirate" has anonymously given a pound note to the hospital, according to *California and Western Medicine.*

Chicago Hospital Announces Program of Expansion

The Norwegian-American Hospital, Chicago, has announced a program of expansion and improvement, at a cost of $400,000, that will increase the organization's investment to more than $1,000,000.

The plans include razing that part of the building group known as Tabitha Hospital, erected in 1894, to make way for a five-story central administration building. In addition a five-story wing is under construction, both to front on Thomas Street.

The new portion of the hospital will contain a total of 130 rooms comprising sixty-three patients' rooms, with toilet and closet attached, twelve patients' rooms with private baths, three operating rooms, sterilizing rooms, and doctors' and nurses' rooms.

The Norwegian-American Hospital was built in 1894. One of its buildings was erected about two years ago and a wing was constructed in 1917. Officers of the institution point with pride to the fact that public subscriptions never have been solicited from the public and announce that the financing of the new improvements is through a $275,000 bond issue underwritten by a Chicago bank.

Report Cites Need of More Beds for Child Patients

Thirteen per cent of all those who die are babies under two years of age, yet of the 32,000 beds in all New York City hospitals, the number set aside for children of all ages is less than 1,200, according to the annual report covering the forty-fifth year's work of the babies' wards of the New York Post-Graduate Medical School and Hospital, which is seeking additional accommodations for child patients.

The report cites some of the work accomplished in the various departments of the hospital and tells of the progress made in combating children's diseases.

"During the past year," the report states, "1,812 children, a great many of them desperately sick, were admitted to the eight babies' wards to receive all that medical science and the devoted staff of physicians and nurses could give.

"The great work of preventive medicine went forward in the out-patient clinics. In these 24,008 cases were treated. In the feeding clinic about 900 mothers were instructed in that all-important business of infant feeding."

Three New Hospitals Opened by Veterans' Bureau

The United States Veterans' Bureau recently has placed in operation three new hospitals in various parts of the country. The new hospital at Tucson, Ariz., has 261 beds and takes the place of the old institution there. The new Portland, Ore., hospital, which has 313 beds, has made possible the closing of the old hospital in Portland and also the hospital at Tacoma, Wash., which has been returned to the United States Indian service. The third new hospital is a fifty-seven bed institution at Fargo, N. D., to be operated in conjunction with the regional office. The latter will be a clearing house for cases requiring hospitalization in larger institutions and at the same time will make possible the caring for a small number of patients from North Dakota.

When the government took possession of the hospital property in Tacoma in 1920 and transformed it from an Indian school into a hospital for disabled World War veterans, $160,000 was spent for equipment. This in-

News of the Month

cluded cots, complete laboratory supplies, x-ray machines, furniture and other necessities of the modern hospital. The hospital as rearranged for Indians will include a special sanatorium for tuberculous children, with school instruction provided. Eye, ear, nose and throat operations will be performed. In charge of the medical work is a director who has under his supervision an expert in the treatment of tuberculosis and a general medical surgeon.

Recent expenditures of $25,000 for improvements have been made in the forty-two buildings of the group. Indians from the entire Puget Sound district, now cared for in hospitals at Pyramid, Nev., and Lapwai, Idaho, will be returned to the Cushman hospital. There are now accommodations for 100 patients but within a year the capacity will be doubled, it is expected.

Indians who will be served by the hospital number more than 6,000.

Mary Immaculate Hospital Opens New $2,000,000 Building

The new $2,000,000 building of the Mary Immaculate Hospital, Jamaica, N. Y., was opened for patients June 17. During the two days preceding, the structure was open for public inspection.

The building, entirely fireproof in structure, has facilities for 250 patients, and with the old building in operation the total capacity is 310. It is seven stories high and is constructed of colonial brick and limestone. Impressive bronze doors lead into the main lobby, which is two stories high and constructed of marble. Terrazzo flooring, bordered in brass, is used throughout the structure, excepting in the kitchens where red tile is used.

The operating rooms, walled in soft apple green tile, are fitted with the new shadowless lights. Two of the operating rooms have galleries for students and visiting physicians.

Japan Opens Memorial Hospital Honoring United States

The United States Department of State has received notification of the formal opening of the Do-ai Memorial Hospital, erected in Tokyo in memory of the assistance rendered by the United States during the Japanese earthquake.

The department has also been advised of the establishment of a scholarship fund by the heirs of the late Egar A. Bancroft, former American ambassador to Japan, for the education of Japanese subjects in the United States.

The announcement by the Department of State follows in part:

"The Department of State has been informed by His Excellency, Katsuji Debuchi, the Japanese Ambassador, that the opening ceremony of the Do-ai Memorial Hospital, Tokyo, was held on June 1, 1929.

"In his communication to the State Department the Japanese ambassador recalled that when Tokyo and its vicinity were visited by a catastrophic earthquake in September, 1923, the people of the United States manifested prompt and profound sympathy towards the afflicted people and poured relief and supplies into the devastated district, which went far beyond the relief of immediate distress.

"With this surplus, two hospitals have been built, one at Tokyo and the other at Yokohama. They are both splendidly equipped and staffed, and bear the name of the Do-ai or Fraternity Memorial Hospital. The one at Yokohama was opened in September last.

"The Japanese ambassador added that pursuant to an instruction from his government, he took pleasure in expressing the deep gratitude which the government of Japan entertains toward the government and people of the United States for their unbounded sympathy and generosity. The ambassador stated furthermore that he believed that these hospitals, as their name signifies, would be an everlasting monument to the cause of friendship and good will between Japan and the United States."

Coming Meetings

American College of Surgeons.
President, Dr. Franklin H. Martin, 40 East Erie Street, Chicago.
Executive Secretary, M. T. Farrow, 40 East Erie Street, Chicago.
Next meeting, Chicago, October 14-18.

American Dietetic Association.
President, Anna E. Boller, 25 East Washington Street, Room 1122, Chicago.
Secretary, Quindara Oliver, 25 Marlboro Street, Boston, Mass.
Next meeting, Detroit, October 7-10.

American Public Health Association.
President, George W. Fuller, 170 Broadway, New York City.
Executive Secretary, Homer N. Calver, 370 Seventh Ave., New York City.
Next meeting, Minneapolis, Minn., September 30-October 5.

Colorado Hospital Association, Inc.
President, Dr. Maurice H. Rees, University of Colorado School of Medicine and Hospitals, Denver, Colo.
Executive Secretary, Frank J. Walter, St. Luke's Hospital, Denver, Colo.
Next meeting, Greeley, Colo., September 3-5.

New Jersey Hospital Association.
President, Dr. Joseph R. Morrow, Bergen County Hospital, Ridgewood, N. J.
Executive Secretary, W. Crane Lyon, 201 Lyons Avenue, Newark, N. J.
Next meeting, Newark, N. J., October 4-5.

Ohio Hospital Association.
President, C. A. Brimmer, Mansfield.
Executive Secretary, J. R. Mannix, 630 East River Street, Elyria.
Next meeting, Youngstown, October 8-9.

Western Hospital Association.
President, Emily D. Loveridge, Good Samaritan Hospital, Portland, Ore.
Secretary, Grace Phelps, Doernbacher Hospital, Portland, Ore.
Next meeting, Portland, Ore., October 24-25.

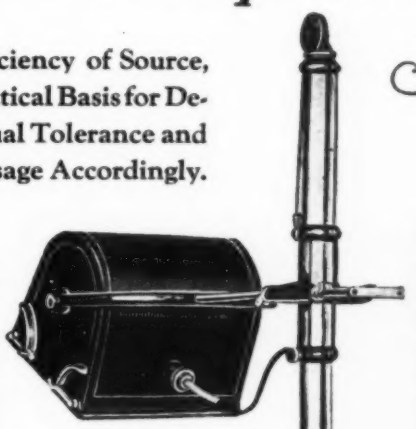
British Columbia Hospital Association.
President, J. H. McVety, 714 Richards Street, Vancouver, B. C.
Secretary, E. S. Withers, Royal Columbian Hospital, New Westminster.
Next meeting, Nanaimo, September 12-14.

Manitoba Hospital Association.
President, H. W. Graham, Morden, Man.
Secretary, Dr. Gerald S. Williams, Children's Hospital, Winnipeg.
Next meeting, Winnipeg, September 12-13.

Ontario Hospital Association.
President, R. H. Cameron, 62 Wells Hill, Toronto, Ont.
Secretary-treasurer, Dr. F. W. Routley, 410 Sherbourne St., Toronto, Ont.
Next meeting, Toronto, October 16-18.

Important Developments in Apparatus for Ultraviolet Therapy.....

Increasing the Efficiency of Source, and Offering a Practical Basis for Determining Individual Tolerance and Administering Dosage Accordingly.



ONE of the present-day problems in the field of ultraviolet therapy is that of correct measurement of dosage. With a myriad of types of ultraviolet lamps on the market, little wonder that there is confusion when it comes to comparison of clinical results obtained with two or more types of lamps, in the hopes of standardizing ultraviolet dosage.

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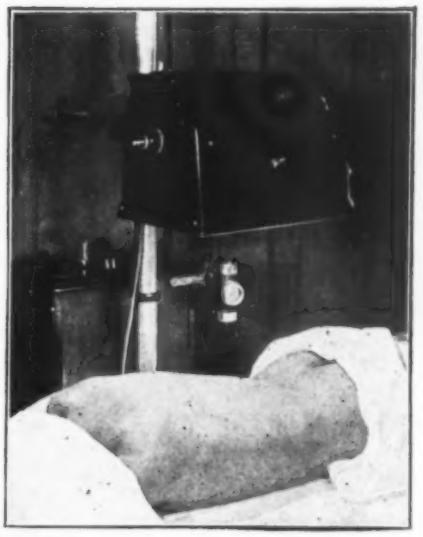

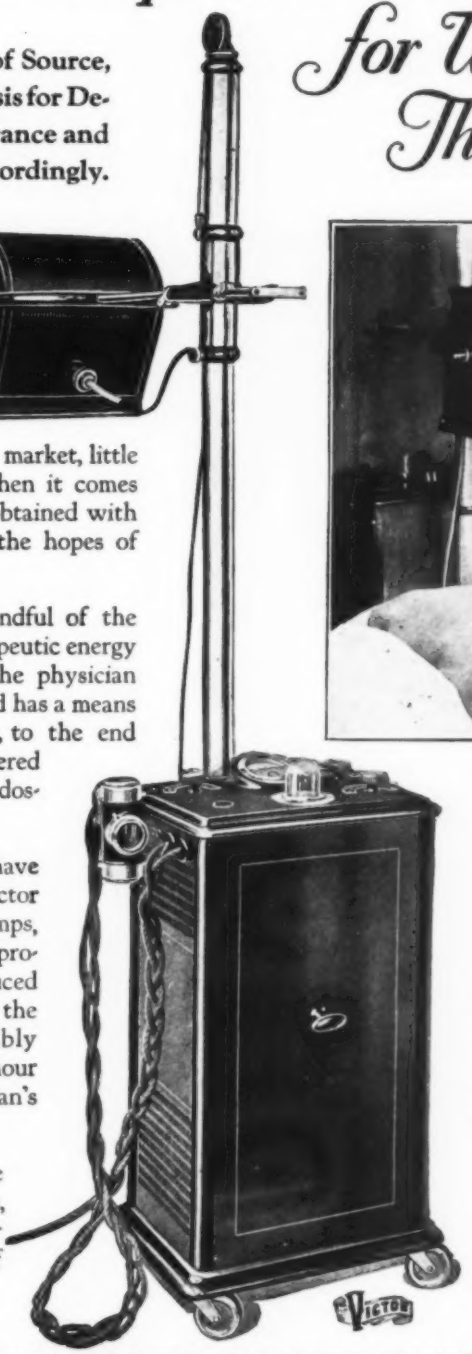

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Conducted by M. HELENA MCMILLAN, R.N.,
Director, School of Nursing, Presbyterian Hospital, Chicago

Building a Solid Nursing Structure Upon a Foundation of Education*

By CARRIE M. HALL, R.N.
Principal, School of Nursing, Peter Bent Brigham Hospital, Boston

AS I face the task of crystallizing my thoughts on the subject of nursing education I am fully aware that all that is known of nursing education has been stated over and over again, from every angle, by those much better qualified than I. It is upon twenty-five years of graduate nurse experience, twenty-three years as a superintendent of nurses and principal of a school of nursing that I base the observations set forth in this paper.

I could enter into a review of the very wonderful progress made in this quarter of a century. I could tell of my personal experiences, for my career as student nurse began at a time when formal teaching beyond a few lectures was little known in schools of nursing. But it is not necessary to repeat again the story of the growth of modern nursing. All who are connected with hospitals know what an asset the student nurse has been in the development of hospital service. All are more or less familiar with the system of instruction that has developed around and upon this ward service which we call nursing education. When I became president of the National League of Nursing Education four years ago, I felt that the term, "nursing education," had become a hackneyed expression. I had listened to addresses in which the phrase had occurred as many as twenty-five times. I was tired of it. For three years I tried to find substitutes and spoke of "nurse preparation," "experience" and "training," but none of these terms seemed to fit the case and I succumbed to the use of the term, "nursing education."

That seems to be exactly what is meant. Training that produces skill and experiences that form habits are good if rightly directed. But back of them must be that sound preparation that implies a good cultural background and includes fundamental sciences and an understanding of human relationships and the ideals and principles of a profession.

Probably principals of schools of nursing understand better than anyone else how unsatisfactory and incomplete the whole system has become. And when I speak of the principal of the school of nursing I mean that officer who holds the dual position of superintendent of nurses and principal of the school for there are but few instances where these responsibilities have been divided. In what I have to say I shall refer only to those schools that are integral departments of hospitals, since those with college and university connections constitute only about 2 per cent of all the schools.

In the United States there are schools in 2,135 hospitals ranging in size from five to 4,000 beds. These hospitals are of every kind, public, private, general and special. There is no uniformity in clinical material and there are no criteria or restrictions for determining what hospitals may conduct schools. Student nurses are present because fifty years ago hospitals found that a training school provided an economical way of nursing patients.

Candidates are admitted from seventeen to thirty-seven years of age. Their fundamental education ranges from eight grades of public school to the possessor of a master's degree. Frequent attempts have been made to make graduation from high school a minimum entrance requirement. The average candidate at entrance is below this and the level seems to be falling rather than rising. It is apparent that those schools requiring high-school graduates must catch them as they come out of high school; hence, the youth of the students. Not all of these variations in age and fundamental education are found in one school but they are varied enough even in a single school so that there is no common background for teaching. In so mixed a group instruction must be pitched to the level of the average. Satisfactory professional education cannot be built upon eight grades of grammar-school work or upon one or two years of high school.

Some nursing schools have teachers and some have none. The evolution of the instructor has been an interesting development. It has occurred during this quarter century. In the school of nursing at Peter Bent Brigham Hospital, the nurse instructor in sciences teaches seven subjects. There are plenty of schools in which the instructor is required to teach seventeen subjects or more. This type of teaching cannot be considered suitable for schools of higher education.

Service to the patients and to the hospitals is the thing

*Read at the thirty-first annual meeting of the American Hospital Association, Atlantic City, June 17-21, 1929.

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on which the whole system depends. Students perform nursing tasks and others over and over again until they have no bearing whatever on education. The eternal conflict between the two functions, service and education, is a constant nightmare to every principal. It is not only that the needs of education and of service to the hospital may not coincide but that they usually do not coincide and the problem of the superintendent is not to prevent injustice to a few students but to distribute it evenly among all students.

In the American Hospital Association report for last year occur statements by one of the convention speakers as follows: "I believe that the supreme need of nursing service is nursing service—attending patients. I know of no way in which nurses can become familiar with human needs except through constant contact with humanity. . . . I know of no way of teaching the nurse her responsibility toward the patient except by a study of the patient."

It is doubtless true that constantly repeated care of patients tends to form certain nursing habits on the part of student nurses but it does not constitute a study of the patient. Study implies research or at least thoughtful consideration directed by teachers. If all the routine nursing care given by students meant a study of the patient with respect to the physical, mental and social aspects involved, nursing education might not present the problems that are before us. Care of hospital patients by student nurses always means a volume of work to be done in a given time. It is the exceptional student who gets very much below the surface of things unless she is directed.

Clinical Experience Is Varied

The variety of clinical experience is as different as the size and the character of the hospitals. Affiliations cannot always be provided to guarantee teaching and experience in the basic subjects. Subjects taught and methods of teaching are quite as varied and uncertain as the clinical material. In a fairly good school giving a three-year course and having an eight-hour day and a fifty-two and a half hour week, may be found the following division of time: class hours, including lectures, recitations and laboratory, 830 hours; hospital service in wards, operating rooms and other departments, 6,830 hours. It may be seen that the service is eight times that of the formal instruction. A much wider difference is to be found in hundreds of other even less fortunate schools.

Each year about 20,000 nurse students are graduated from these courses. The number is increasing annually. There are no national standards for admission or for graduation and the state standards are nearly as varied as the number of states. As graduate nurses they vary in ability and acceptability just as widely as they differed on admission in age, cultural background and educational preparation. The ambitious ones too often find they are not qualified by education and professional training to enter the fields and the positions to which they aspire. The indifferent ones discover that the demand for their services is irregular and that periods of employment are short. Their earnings are small. The demand in the community for graduate nurses is not as great as the supply. Yet training schools continue to increase in numbers and in size without apparent regard for the future of these women. Some managers have frankly stated that they feel no responsibility for their future beyond providing for the hospital's work.

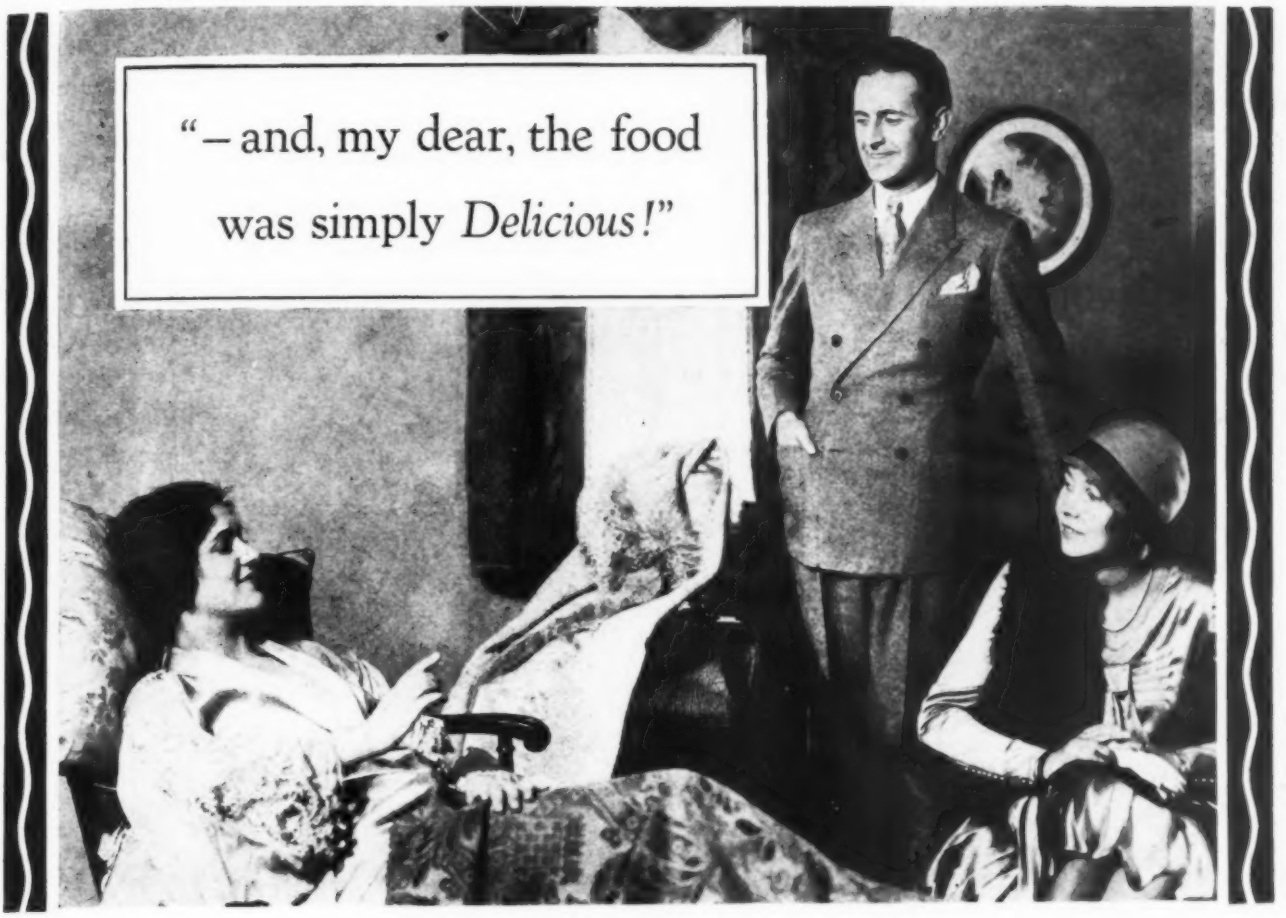
In the literature on nursing education one need not go back of those studies that have pictured the problem so graphically, "Nursing and Nursing Education in the United States," published in 1923, and "Nurses, Patients and Pocket Books," published in 1928. These two volumes expose all the weaknesses and disadvantages of the system. The first gives conclusions based on an intensive study in a limited number of schools in several types of hospitals. The second is the result of an intensive study of the graduate nurse in the field, in each of the major types of service. Both stress the need for quality in nursing service. Both suggest autonomy of the school and each advocates endowments for nursing education.

It is now a full year since we have had the book, "Nurses, Patients and Pocket Books," with its facts and its implications. We know that this is a preliminary study and that the first actual grading of schools is taking place this year. But what have we done with the preliminary report? Nothing! The directors of our three national nursing organizations spent an entire session last January trying to determine how nurses might take the steps implied in the report. Actual returns from the first grading which has just taken place will help tremendously and may point the way to future developments. The first implied task, "to reduce and improve the supply," is dependent on the second, which is "to replace students with graduates." This in turn is dependent on the third, "to help hospitals meet the costs of graduate service." And this seems to be the crux of the whole matter—that hospital boards shall recognize and meet the need for a paid graduate nursing service. The fourth recommendation, "to get public support for nursing education," has already happened in a few instances. Other support is sure to follow.

Nursing education has progressed just as far as it can under hospital control. In these indicated reforms our hands are tied and our way is completely blocked by the system under which we operate. If apprenticeship as a means of education is unsound let us abandon it as every other group has done. In all fairness to the employers of graduate nurses who have every right to require expert nursing service, and in all fairness to the students who knock at the doors of nursing schools we should be in a position to offer sound educational programs, by expert teachers under conditions which make study possible and experiences of true educational value.

Hospital Is Best Place to Teach

The place to teach nursing is in hospitals where the sick are assembled. It is highly desirable that the best of our bedside experiences should be retained as of precious value, and that the bedside teaching should be vastly improved. But good nursing cannot be taught where good nursing is not being performed. With an all-student service, even with graduate nurse direction, one cannot guarantee the quality of nursing. Much of the nurse's education can be better secured outside of hospitals, in institutions of learning. To produce the best results, nursing schools should be limited in number, should be separate organizations and the teaching should be directed from the point of view of education and not from that of service. Such a policy presupposes two fundamental changes. The first is the substitution of graduate nurses for student nurses in a great many hospitals which, because of their size, a lack of clinical material, a limited number of services and for other reasons, ought not to attempt a training school, and in those hospitals which do present adequate clinical material and teaching facilities, the employment of enough graduate nurses to ensure a basic nursing service. Student nurses in such hospitals would only supplement the service, securing experiences necessary for a rounded education.



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It is my opinion that the public resents student nurse service as a basic service in hospitals. The employment of graduate specials by private and semiprivate patients is an astonishing development of the last few years. Much is heard of the inability of patients to meet these costs. But the demand is extravagant, out of proportion to the seriousness of the illnesses, and these patients always find a way to pay. In a hospital which has within a few years changed from a graduate to a student service the demand for graduate special duty nurses has increased markedly. I doubt if a change from student service to graduate service now would mark any greater step than did the change fifty-six years ago from untrained service to student nurses. It will come. It has already begun.

Second, endowments for nursing education are inevitable. In every other field this has been the solution of the expense of education, and it must come in nursing. This is not a new thought. It was stressed by the report of the Rockefeller Committee in 1923, and again last year by the Committee on the Grading of Nursing Schools.

As principals of schools, it is our aim to give nurse students an education which will fit them as graduate nurses to give intelligent and skilled nursing service to all kinds of persons, in all sorts or places and under every condition. The next groups, from whom sympathy, support and cooperation must come, are the hospital trustee group and the hospital superintendent group. Understanding is coming. If all the interested groups come together often enough, pull together strongly enough and keep the goal in sight, we shall soon be on the way toward "reducing and improving the supply of graduates, replacing students with graduates, finding a way for hospitals to meet costs of graduate service and securing public support for nursing education."

"Attempt the end and never stand in doubt,
"Nothing so hard but search will find it out."

The Value of Clinical Records to the Hospital, the Patient, the Community

By ELLEN V. GRIFFIN, R.N.

Director, Out-Patient Department, Cambridge Hospital, Cambridge, Mass.

A record of any kind is of little value unless it contains orderly, reliable and useful information, this information being readily available for all those who have legitimate access to it. The clinical record in relation to the hospital, the patient and the community to be of value should be a finished narrative of the physical and laboratory findings, consultations, diagnosis, treatment, progress and discharge notes. If to these can be added, in a period of six months or a year, the follow-up notes of the results of treatments given, it is then a complete story.

The persons responsible for clinical records are the doctors, the nurses and the record librarians. Another influence for the trend toward the perfection of clinical records is an active record committee, whose mission it is to detect flaws and omissions and to make helpful suggestions. Such a committee is of distinct value to the patient in that it stimulates those concerned with the treatment of the patient to give close attention to detail. To be helpful this committee should be familiar with the standardization of nomenclatures of diseases and operations, clinical charts and record forms, and in addition it should have a general knowledge of the work of the record librarian.

It is undisputed that the persons directly responsible for clinical records are the doctors who have special medical knowledge and who are educated to ascertain and record, or to have recorded, valuable information. The doctors are responsible for the data, and the record librarians are responsible for the proper assembling and filing of records. Promptness and accuracy in recording are essential for the patient and for the hospital. They are helpful in that they prevent unnecessary duplications of treatment, clear all doubt as to what has been done and frequently hasten decisions. Clinical or medical records represent the hospital's consciousness. They are the medical history of the hospital. The doctor and the hospital that demand such methods and records are making a reputation for themselves, and are assuring honest treatment to the communities from which the patients come.

It is not fair to say that good work is never done unless there are good records, for to a number of people recording is not only drudgery but a nuisance. They forget that when they go their knowledge goes with them. Because of this, a great deal of valuable material has been lost to research, the channel through which communities are benefited. The possession of good clinical records by a hospital means, for that institution, a solid medical foundation.

Patients and relatives frequently object to all the questions they are asked in what seems to them the unnecessary probing into family and past history; yet, if a good record cannot be produced by a hospital when patients, lawyers or the courts demand it, the opinion is expressed that indifferent work is done at that hospital. That the confidence and respect of a patient are increased when businesslike methods are used is often seen, when out of the files is brought a record of an illness or accident that the patient himself had forgotten.

Clinical records are the silent testimony of the integrity of the hospital and reflect the character of the institution and its staff. They are safeguards to all that they concern, especially in these days of frequent accidents. They are of value to the hospital because in the ability to produce them, it clearly and frankly defines its function which is, first and last, the care of the sick. They make possible the interchange of medical information between hospitals—a type of life insurance for the patient who has paid the premium in the form of a previous illness. They are of value to the patient because they serve as a guide for the doctor. They are of value to the community when from them data can be obtained which determine legislation concerning health and disease, and they are often the authoritative sources for the development of preventive medicine. They further benefit a community because it has in its midst an institution that has the community spirit of giving of its best.

Grants for the Mothers of Saskatchewan

The province of Saskatchewan, Canada, last year distributed maternity grants to 521 mothers, according to the *Journal of the American Medical Association*. The grant is $25 and may be paid to the hospital or to the physician, or if a physician is not available within twenty-five miles, to the nurse who attends the case, or to the mother herself; or it may be divided among the mother, the physician and the nurse. The grant is to help mothers in outlying districts and not those who reside in a municipality. The mother applying for the grant must be recommended by an official of her district. Saskatchewan is said to be the only province in Canada that gives maternity grants.

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The Use of Evaporated Milk in Infant Feeding

By AMALIA LAUTZ, B.S., Ed.M.

BECAUSE evaporated milk is being found increasingly useful in feeding infants deprived of breast milk and because it is pure cow's milk in a sanitary, inexpensive form, information concerning evaporated milk is of value to every dietitian, hospital superintendent and physician. Accordingly, it is worth while to examine some of the recent reports of clinical and laboratory research carried on with evaporated milk in order to evaluate the fundamental facts obtained by the scientific study of this valuable food product.

In an "Experimental Study of the Use of Unsweetened Evaporated Milk for the Preparation of Infant Feeding Formulas," *Archives of Pediatrics*, March, 1929, Dr. W. McKim Marriott and Dr. Ludwig Schoenthal, Washington University, St. Louis, and St. Louis Children's Hospital, St. Louis, report a significant clinical study. Seven hundred and fifty-two infants were fed with evaporated milk formulas and 670 controls were fed with breast milk or artificial formulas containing bottled milk. The study was initiated because of the good results obtained for years with evaporated milk in districts where good milk is unobtainable. It had also proved its worth in cases of mothers too poor or too ignorant to provide proper refrigeration or sterilization of milk.

Normal newborn infants at the St. Louis Maternity Hospital, infants at the Well Baby Clinic of Washington University Dispensary, St. Louis, young infants in the wards of St. Louis Children's Hospital and a group of infants in private practice were included in the study. Cases were unselected. Of course, no babies were taken off the breast for the purpose of the experiment since the aim was to make a comparison of artificial feedings when breast feeding of the infant was impossible.

No essential difference was made in the feeding régime between evaporated milk and other feeding cases. The evaporated milk was always diluted equally with water to make up the water lost in evaporation. Both sweet and acid formulas were included in the feedings. Varied brands of evaporated milk obtainable at grocery stores were used. Cod liver oil and orange or tomato juice were given routinely. Those babies that reached six months of age or more received additions of cereal, green vegetable purée and occasionally meat broth.

The criterion for judging results was chiefly gain in weight which is directly affected by digestive disturbances, infections, and other pathological conditions. General results of the various groups were as follows: Among newborn infants, 92.8 per cent of those that were fed with evaporated milk only regained their birth weight in fourteen days. The percentage for those fed with evaporated milk chiefly was 80 and for those fed with breast milk or breast milk with cow's milk supplement, 66. There was no evidence that evaporated milk led to digestive symptoms and there were no cases in which it was necessary to substitute some other form of milk.

Average Daily Gain Is Same

For well infants in dispensary or private practice, the average daily gain for both the infants in the evaporated milk group and in the control group was 0.9 ounces a day. The development of the infants on evaporated milk was normal in every way as judged by time of dentition, sitting up, walking, and other physical criteria. There was no lack of resistance to infection. No evidence of rickets was observed and there was no evidence of scurvy except in one case which had received orange juice irregularly. During the two summers of the experiment the infants were as a group not subject to fermentative diarrhea.

For hospital cases, including surgical cases and those presenting such complications as infections, diarrhea, vomiting and difficult feeding, the average daily gain of the babies on evaporated milk feedings was 0.65 ounces as compared to an average daily gain of 0.44 ounces of hospital cases on other types of feedings. Especially good clinical results were obtained from feeding evaporated milk in cases of diarrhea.

Of eleven premature babies, nine received evaporated milk exclusively and two received, for a short time, supplementary feedings of breast milk. The use of evaporated milk was begun during the first few days of life and continued for an average of sixty-six days. The average daily gain of all premature infants was 0.79 ounces. That of the nine infants exclusively fed evaporated milk was 0.92 ounces. One premature infant that weighed four pounds at birth and received only evaporated milk for ten months progressed normally and weighed 99.8 per cent of the average normal weight at the end of the observation. The premature infants were remark-

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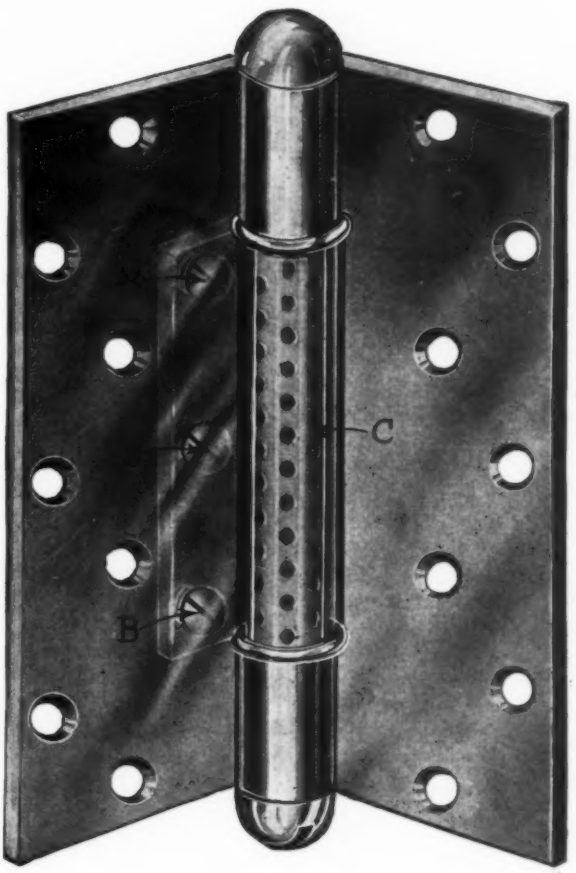

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ably free from digestive disturbances and showed little tendency toward infections. Doctor Marriott and Doctor Schoenthal write, "We consider the results in the case of these premature infants possibly the most convincing evidence of the suitability of evaporated milk for infant feeding."

The conclusions drawn from the entire experiment are: (1) Unsweetened evaporated milk is from the nutritional standpoint the full equivalent of Pasteurized or boiled whole cow's milk; (2) continued use of evaporated milk as a routine food for normal infants is unattended by nutritional disturbances; (3) evaporated milk is especially suitable for premature infants; (4) evaporated milk when suitably modified has been shown to be satisfactory for sick infants, especially those suffering from nutritional or gastro-intestinal disturbances; (5) the known qualities of unsweetened evaporated milk—sterility, digestibility and uniformity of composition—are distinct advantages that recommend it for general use as milk for infants.

Compare Milks in Investigation

Dr. Joseph Brennemann, Chicago, in his paper on "The Curd and the Buffer in Infant Feeding," *Journal of the American Medical Association*, February 2, 1929, discusses an investigation that has as its purpose a critical clinical examination of the validity of the theories advanced as to the cause of the superiority of acid milk over sweet milk. The final results of the investigation are to be reported later. The observations are being carried on at the Children's Memorial Hospital, Chicago.

Two main reasons for the use of acid in infant feedings are that the hydrogen ion concentration becomes practically equal to that during breast milk digestion and that only a small degree of coagulation of the curd takes place. Doctor Brennemann proposes in his study to evaluate the relative importance of these two factors by employing as a food a milk that will not coagulate in the stomach and by using it with and without an acid and then comparing the results from the acid and nonacid feedings. Evaporated milk was chosen for the investigation because of its small fine curd. All babies in the wards were included except premature infants and infants on the breast. The babies were sick babies suffering from infections, such as pneumonia, meningitis, encephalitis and otitis. The cases were not feeding cases as such. The criterion for judging the effects of the feedings was the general progress of the baby with gain in weight as an important factor and the stool as a measure of digestion.

Various simple formulas were tried and the Marriott formula was finally adopted.

1 pint of evaporated milk.

1 pint of stock solution, *e.g.* 3 oz. of brown corn syrup with 5 c.c. of U. S. P. lactic acid and water up to 1 pint.

This formula gives a total of one quart of whole milk with an additional 8 or 9 per cent of soluble carbohydrate making a total of 12 per cent of carbohydrate. Of the mixture, babies were given all they would take every twenty-four hours. Babies were next put on the same mixture without lactic acid and then switched back and forth from nonacid to acid formulas and *vice versa*. One hundred twenty-eight tests were made on more than one hundred babies, sixty-seven with lactic acid and sixty-one without.

According to the composite opinion of Doctor Brennemann, Doctor McEnery, the interns and the nurses, no tangible differences between results with and without the lactic acid addition were observed. At no time was the need felt of changing babies from acid to nonacid milk or *vice versa*, or to any other mixture. Many of these very sick babies had on either food normal stools to the end of life. In general, results were all that could be hoped for and far better than those ever observed with any other artificial food. Stools were good and the gain in weight was sometimes amazing, equalling the results of breast feeding.

In "Clinical Experience With Evaporated Milk as a Source of Food Supply in 175 Artificially Fed Sucklings" in the *Medical Times*, New York, March, 1929, Dr. Harry Lowenburg, Philadelphia, reports further findings with evaporated milk as the form of cow's milk used in infant feeding. Doctor Lowenburg calculates evaporated milk as roughly double the food value of milk, or 8, 8, 8 of protein, fat and carbohydrate, with a value of from 40 to 44 calories per ounce. For ordinary use Doctor Lowenburg suggests from 40 to 45 calories per pound per day and from 60 to 80 or even 100 calories for prematures and weaklings, the caloric allowance varying with the type of case and the appetite.

An ounce of sugar is added to the mixture and two to three ounces of boiled water are allowed per pound, including the water content of the evaporated milk which is calculated as 40 per cent of the entire evaporated milk mixture. With a total quantity too great, the water can be reduced or even entirely eliminated in the mixture and given between meals. No ill effects were found with such concentration. In some cases, sugar was omitted and saccharin or bitter cocoa substituted instead. Further ingredients may be added if this is considered necessary. These ingredients may include acids, egg yolk or lime water, or the milk can be pancreatized if desirable. Orange juice, tomato juice, cod liver oil, irradiated ergosterol or irradiation by alpine lamp can, of course, be used.

Doctor Lowenburg's experience exemplifies the use of evaporated milk as a standard milk supply applicable to many systems of infant feeding. All types of infants are included in Doctor Lowenburg's study, both normal and pathological, some infants merely deprived of mother's milk and others suffering from digestive and nutritional disturbances, infections and other ills. Five or six premature infants were also included, the smallest weighing three and one-half pounds. In other words, wherever additional milk was needed to supplant or supplement the maternal milk, unsweetened evaporated milk was used as a source of the milk supply. The guiding points for judging progress were the stools, vomiting, weight, tissue turgor, color, rickets and scurvy. As in Doctor Brennemann's observation, an arresting change for the better in stools was observed where fermentation and diarrhea existed, the stools becoming yellow and approaching neutrality.

Evaporated Product Used in Many Ways

Vomiting occurred less frequently when evaporated milk was used. The milk was found valuable when the appetite was poor, when small bulk was needed or when for any reason it was necessary to concentrate the food. Evaporated milk was successfully utilized when given with equal, half or no dilution, in cases where raw or boiled milk formulas were expelled. In the management of prematures or weaklings, this is of great importance.

The use of from five to fifteen drops of evaporated milk in addition to every ounce of breast milk fed to newborn and premature babies had an excellent effect on the stools. The so-called "normal indigestion" of breast feeding did not occur and the initial loss of weight was prevented or considerably curtailed. The results on the underweight prematures led Doctor Lowenburg to the belief that the

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use of evaporated milk in thus modifying colostrum should become a routine procedure in infant feeding. By eliminating mucus and curds during the first week of life, infant mortality will be materially reduced.

All the babies gained from four to eight ounces per week in the absence of parenteral infections. The babies exhibited fine color and firm hard flesh. No babies developed either rickets or scurvy. An antiscorbutic was used as must be done with all babies on artificial food. While no babies received cod liver oil and only a very small majority were exposed to alpine sun ray, none developed clinical symptoms of rickets.

The conclusions of Doctor Lowenburg in regard to evaporated milk are interesting and useful: (1) Unsweetened evaporated milk may not be regarded as a proprietary food; (2) it is sterile, the fat is homogenized. Both fat and the protein are made more digestible and the milk is uniform in composition; (3) the vitamins, except Vitamin C, are not destroyed; (4) it is a corrective of intestinal fermentation; (5) it does not induce vomiting; (6) it is useful when food concentration is needed; (7) it does not cause rickets; (8) it may cause scurvy, if used without an antiscorbutic; (9) it is adaptable to any method of feeding employed; (10) it is a useful modifier of colostrum and of mother's milk; (11) gain in weight, tissue turgor and color are as well maintained when this milk is employed as a source of food supply as when any other milk is used with the exception perhaps of skim milk and boiled butter; (12) it is cheap and always available; (13) it cannot, however, be employed when it is desirable entirely to eliminate fat.

In the "Dietary Treatment for Nonsurgical Pyloric Stenosis," Society Transactions, Chicago Pediatric Society, *American Journal of Diseases of Children*, March, 1929, Dr. L. W. Sauer states that thick cereal feedings have not been found desirable for such cases. Food must be of high caloric content, readily digestible and free from coarse curd formation while in the stomach. The volume of a feeding must be less than that which produces the vomiting reflex.

Preliminary tests were made with various milk mixtures to which hydrochloric acid and pepsin were added and the mixtures incubated for four hours. Results follow:

Milk	Results
Raw cow's milk	Large curds
Boiled milk	Somewhat smaller curds and whey
Farina cooked in half milk 1:7	Firm and colloidal
Breast milk	Finer curds than boiled milk
Powdered milk in water	Finer curds than boiled milk
Powdered protein milk in water	Finer curds than boiled milk
Diluted evaporated milk	Extremely fine curds

Various small concentrated liquid feedings were tried. A successful powdered milk formula was discarded because of the findings of Dr. Gladys Dick and Dr. George Dick, Chicago, concerning the high bacterial content of powdered milks as discussed under the "Bacteriology of Dried Powdered Milk Preparations Used in Infant Feeding," *American Journal of Diseases of Children*, December, 1927.

A formula of breast milk enriched with evaporated milk and soluble carbohydrate was finally adopted. When breast milk is unobtainable, water should be used instead as follows:

Evaporated milk, 5 or more ounces.
Soluble carbohydrate, 1 or more ounces.
Breast milk or water, 7 or more ounces.

If the formula is boiled, enough sterile water is added to make it up to the original amount. The caloric value varies with the ingredients used, but it should be twice that of breast milk.

The formula was used with excellent results according to the following procedure. It may be fed by bottle, Breck feeder or dropper. The amount is increased slowly from half an ounce seven times in twenty-four hours to 2 ounces which are well tolerated when vomiting has ceased. One-fourth grain of phenobarbital in from 1 to 2 ounces of tap water or Ringer's solution should be given by retention an hour before feeding, three or more times daily, or 75 c.c. of dextrose Ringer's solution may be given by hypodermoclysis once or twice daily. In the latter case 0.25 grains of phenobarbital may be added to two or more of the feedings. After a fortnight of cautious feeding, from 1 to 3 drams of water may usually be given several times a day, even in extreme cases, without causing projectile vomiting.

Early Concentrated Feedings Advocated

Doctor Sauer states that the earlier suitable small concentrated feedings are instituted, the less likely will surgical intervention be necessary.

A paper raising a further point valuable in the use of milk is that by Dr. Oran I. Cutler, Chicago, on "The Antigenic Properties of Evaporated Milk" in the *Journal of the American Medical Association*, March 23, 1929.

Sensitization to cow's milk is a form of food allergy frequently encountered in infants. It precludes, of course, the use of the average artificial feeding. An easily obtainable commodity closely resembling mother's milk is, indeed, desirable in these cases. Because of the possible changing of the proteins of milk, an experiment was initiated using evaporated, Pasteurized and raw milk in sensitization tests on guinea pigs and immunization tests on rabbits.

Reactions in Guinea Pigs

The majority of the guinea pigs were sensitized with intraperitoneal injections of either 1 c.c. of raw, Pasteurized or evaporated milk which was diluted with an equal quantity of water. After two weeks, a second injection was given to determine the magnitude of the resulting reaction. All three milks, as well as casein and whey protein made from them, were tried out at different times. The minimum quantities of casein and whey proteins needed to produce fatal reactions were noted. Since the whey proteins are the most changed by processing, the majority of guinea pigs were reinjected with the whey proteins.

Minimum quantities of whey proteins from different types of milk that were required to give a fatal reaction to guinea pigs sensitized with various milks follow:

	Milligrams of Whey Proteins		
	Raw	Pasteurized	Evaporated
Raw milk sensitized guinea pigs	0.10	0.10	3.00
Pasteurized milk sensitized guinea pigs	0.10	0.05	2.00
Evaporated milk sensitized guinea pigs	2.00	1.00	0.30

It is interesting to observe that guinea pigs sensitized with raw milk could tolerate 3 milligrams of evaporated milk whey protein while guinea pigs sensitized with Pasteurized milk could tolerate 2 milligrams of evaporated milk whey protein by intravenous injection.

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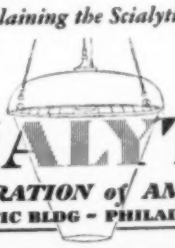

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Precipitin acid complement fixation reactions in experimental work on rabbits corroborated the sensitivity tests in the guinea pigs. While five times as great a quantity of whey protein from Pasteurized milk was required to produce a precipitate in the presence of serums of rabbits immunized to evaporated milk, approximately twenty-five times as much whey protein from evaporated milk was required to produce a precipitate in rabbits immunized to Pasteurized milk, thus showing again that evaporated milk is a most valuable food for animals sensitized either to raw or to Pasteurized milk.

The reasons underlying the excellent results that are unobtainable with the use of ordinary cow's milk but obtainable with the use of evaporated milk in artificial infant feeding have been taken up at length in the various papers.

Characteristics Are Listed

In the article by Doctor Marriott and Doctor Schoenthal, characteristics of evaporated milk are discussed in detail. It is an unsweetened, nonproprietary form of whole cow's milk from which about 60 per cent of the water has been evaporated, it is sterilized instead of Pasteurized, is distributed in cans and is of legally controlled composition. It contains not less than 7.8 per cent milk fat and 25.5 per cent of total solids. The fat is homogenized in the processing and broken up into small globules evenly distributed through the milk without the possibility of separation of the fat as cream. This, together with the federal control of the product, assures a highly desirable constancy of composition.

As the milk is sterilized by autoclaving at a temperature of about 240 degrees, further desirable results are achieved. The most important result is the destruction of all harmful bacteria which makes the milk absolutely nondisease carrying. A second significant result consists of certain changes in chemical and physical properties.

A physico-chemical change which is helpful in infant feeding involves the casein. A large tough curd cannot be formed in the stomach or the test tube from evaporated milk. The milk is noncoagulable by acid or rennin. There is every reason to believe that a small fine curd is a desirable feature in infant feeding and that the large tough curd formed from ordinary cow's milk is one of the great sources of difficulty in adapting it to infant feeding. This is borne out by the fact that when evaporated milk is used, protein curds do not appear in the stools of infants because the protein is more digestible than in other forms of cow's milk. Small curds leave the stomach more readily than larger ones especially in conditions of delayed motility or partial pyloric obstruction. Further, in small curds, bacteria are not enmeshed and so removed from the bactericidal action of the gastric juice. Practically all of the various successful methods of milk modification involve the treatment of the milk leading to small curd formation.

In general, the protein of evaporated milk is readily available. The lactalbumin is partially denatured but its nutritional value is not impaired. A partial denaturization of the protein is an advantage in feeding infants suffering from eczema who are allergic to the protein of cow's milk as corroborated by the findings in Doctor Cutler's paper. Concerning the effects of processing on fat and carbohydrates, there has already been stressed the homogenization of the fat which would also produce a greater digestibility, since the small globules expose a larger surface of fat to lipase action. The carbohydrate in milk is practically unaffected by the process of evaporation and sterilization.

In a "Comparison of Evaporated With Pasteurized Milk as a Source of Calcium, Phosphorus and Nitrogen," *Journal of Biological Chemistry*, October, 1927, Willard and Blunt found good utilization of calcium and phosphorus, the two most important minerals in milk.

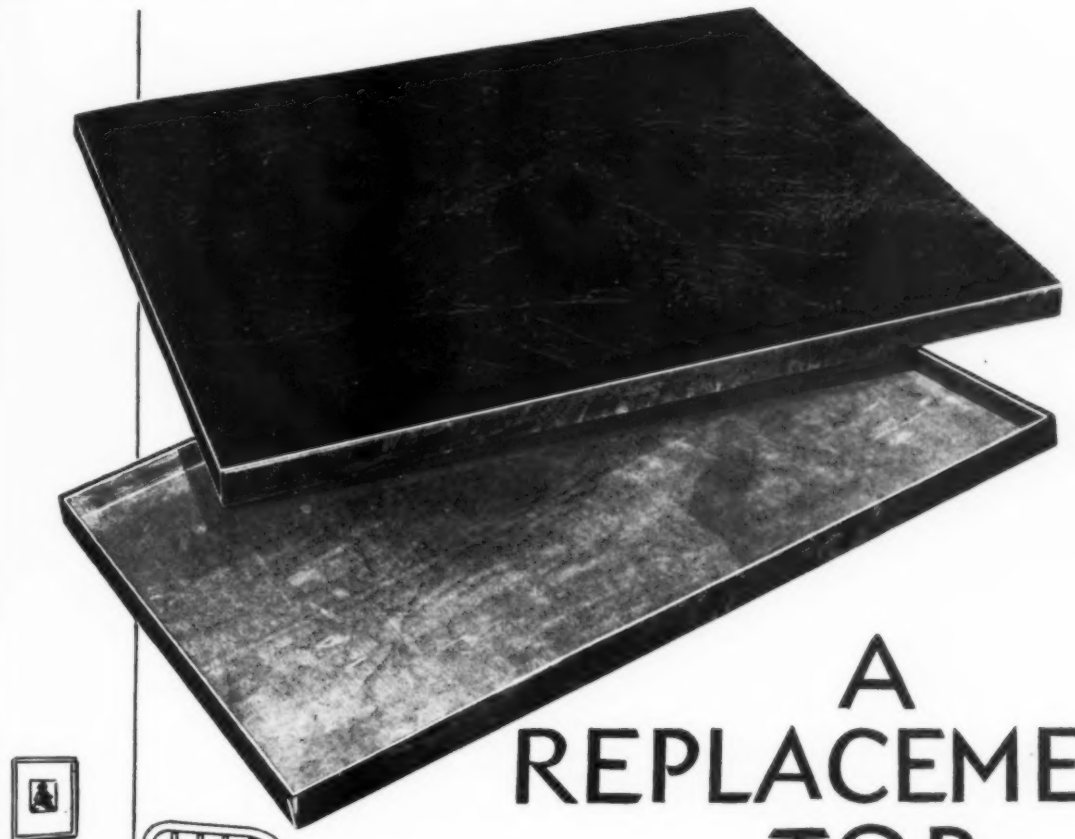
Concerning the vitamin content, there is little difference apparently from that of Pasteurized milk. Vitamin C, low and variable even in raw milk, is destroyed by heat. Orange juice or tomato juice should be given with evaporated milk feedings as with other types of feedings. The fat soluble Vitamins A and D seem to be retained in practically the original concentration. As D is low in all cow's milk, it should be supplemented by cod liver oil the same as raw, Pasteurized or even breast milk. Vitamin B is composed of two parts. B_2, the growth promoting vitamin, is heat stable. B_1, the antineuritic factor, is not heat stable in an alkaline medium. As cow's milk contains about four times as much B_1 as human milk and little deterioration occurs in the evaporating process, there is little doubt of an adequate content of B vitamins in evaporated milk.

Doctor Marriott and Doctor Schoenthal write: "It may be concluded then, on the basis of available scientific evidence, that evaporated milk has essentially the same nutritional value as fresh cow's milk. It has the advantages of sterility, easier digestibility and uniformity of composition, factors that should make it an especially suitable form of milk for purposes of infant feeding."

Concerning the comparison of acid *versus* nonacid feedings, Doctor Brennemann concludes that the acid plays a small or minor part in the therapeutic results. He, too, stresses his belief in the importance of the fine curd produced in the digestion of evaporated milk as compared to that produced from raw, Pasteurized or boiled cow's milk. Doctor Brennemann, like Doctor Marriott, emphasizes the fact that diminution of the size of the curd of cow's milk is the underlying factor in various therapeutic foods and systems of infant feeding. While alkali and acid have been added, while buffer has been increased and decreased, the curd has always been decreased. However, no general deductions as to the rôle of acid in infant feeding are made. As the casein is an important factor in infant feeding, the step from boiled milk to dried or evaporated milk is as logical as the step from raw milk to boiled providing there is no demonstrable inferiority of such milk compared with fresh milk. Further, no nutritional inferiority of evaporated milk has come to light that cannot be supplemented by the use of orange juice and possibly cod liver oil or activated ergosterol which form to-day under any circumstances and with the use of any kind of milk, an essential part of every infant's routine dietary.

Closely Resembles Mother's Milk

Doctor Lowenburg also discusses the nature of evaporated milk. The fact that it contains no sugar or other preservative is emphasized as are sterility, uniformity of composition, fineness of curd produced and homogenization of fat. Concerning the type of curd, Doctor Lowenburg remarks that in this respect there is perhaps no other milk product that so closely resembles mother's milk. He further points to the practical aspects that evaporated milk is inexpensive, requires no refrigeration until the can is opened, and so forms a valuable source of milk supply for the poor and for institutions or while traveling. After opening the can, the same precautions should be observed as in handling and refrigerating bottled milk in the preparation of formulas. A fresh can should be opened just before making up the formulas for the day.



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The recent developments in infant feeding have, as shown by the papers reviewed, placed evaporated milk unquestionably as a most valuable and possibly the most valuable substitute for human breast milk.

It is pure cow's milk of uniform composition. The protein due to the processing produces a very fine curd upon digestion that closely resembles the curd of mother's milk, which is the desired goal of most systems of milk modification. The fat is homogenized and divided into smaller globules than in unprocessed cow's milk, further increasing digestibility. Minerals are available and vitamins are preserved other than Vitamin C which is destroyed in all heating of milk. Evaporated milk is therefore through its increased digestibility more nutritious for infants than other forms of cow's milk.

By wide use under controlled clinical conditions, evaporated milk has been found to be especially suited to infant feeding. It is safe milk because it is sterile. It is excellently taken by newborn children and has been found especially adapted to premature cases. When it is used in modifying colostrum, the usual loss in weight following birth is reduced. Especially good stools without protein curds result from the use of evaporated milk feedings. It does not produce but reduces vomiting. Fine gains in weight, firm tissue and ruddy color are the results of the use of evaporated milk as a routine food for normal infants.

Evaporated milk has been found to be satisfactory for sick infants. The benefits derived from its use in nutritional and gastro-intestinal disturbances are definite and marked. In case of pyloric obstruction, evaporated milk has been used effectively. It is valuable in any condition where food concentration is required.

In short, the use of evaporated milk as described in the papers reviewed has in each instance given highly satisfactory results. Furthermore, as evaporated milk has been found useful in solving the most difficult of all nutritional problems, that of the infant deprived of mother's milk, it is obvious that this clean economical form of pure cow's milk deserves its place as a staple food throughout the various normal and pathological phases of the hospital dietary.

What Fees Should the Hospital Patient Pay?

In order to determine scientifically the fees that the hospital patient should pay, the hospital social worker must secure data on various points. These points were listed by Elizabeth P. Rice of the Boston Dispensary, in an address made at the American Hospital Association convention in Atlantic City, June 17 to 21:

1. How old is the patient? A young person only acutely ill, able soon to return to work, is quite different from an old person with a chronic disease, with little money saved and with old age close at hand.
2. What is the makeup of the household?
3. How many are there in the household, and how many work?
4. What is the patient's occupation? How regular is his income over a year's period?
5. What must be paid out of his total income? Are there other dependents?
6. What are the family's nationality and standard of living?
7. Where does he live and what does that address mean to the social worker?
8. Is the patient a client of a community agency and exactly what does the agency do for the family?
9. What is the patient's medical care? Does it involve long time treatment or treatment that is very expensive at private rates?
10. What is the cost of such treatment at private rates and at clinic rates? For which is the patient able to pay?
11. During the time the patient is being treated, is his income lessened by absence from work?

These are all questions, according to Miss Rice, that involve knowledge of economics and psychology of racial groups, community agencies, layout of the city, industrial groups and their wages and family budgeting.

With a staff of socially trained individuals to determine fees, the hospital is relieved of long outstanding bills unwisely assumed by the patient, and the patient is protected from assuming bills that he is not and probably never will be in a position to pay. It is a saving to the hospital to give this care at the outset rather than to carry on its books unpaid bills, according to Miss Rice.

Giving Hospital Publicity That Vital Spark

"There was never a time in my memory when the newspapers were bombarded with so much propaganda and requests for publicity as in the last few years," was the declaration made by Samuel S. Schwab, managing editor, *Philadelphia Public Ledger*, at the annual convention of American Hospital Association. "This comes from all sources and from all parts of the country where men are employed for that specific purpose, so that the burden now placed upon those whose duty it is to edit and direct the newspaper is becoming greater each day. We have built larger waste baskets, but that does not help us."

Mr. Schwab continued: "In justice to those who send out this material, it should be said that in most cases they do not think it is propaganda. They believe it is news, but they are mistaken. Every good newspaper is willing to open its columns to aid humane and charitable undertakings. It cannot and will not open its columns to propaganda, no matter from what quarter. Neither will it publish prejudiced, biased or colored articles of any description. Therefore, everything that goes into the making of a metropolitan newspaper must, and of a right ought to be news.

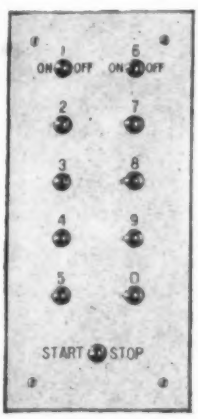
"When representatives of organizations ask how they may procure publicity, they should be told frankly to furnish news, since that is the very purpose for which the newspaper was created—the dissemination of news.

"The hospital wants publicity, the newspaper wants news. What is the difference? Generally speaking, publicity is of interest only to a special group, news is of interest and concern to the great mass of readers. Most of the so-called publicity that reaches the editor's desk is not news—it is created to plead a special cause or laud some special project without regard for news interest. And in most cases the facts presented are already well known to those directly concerned with the institution and are of little interest to the great majority of readers even if they can be induced to read beyond the headlines.

"The problem then becomes one of giving to publicity that vital spark that arouses reader interest; in other words, to get away from the special group idea and present it in a manner that makes it deserve the space that editors are always willing to give to worth while news."

MODERN HOSPITAL SIGNALING

on the important subject of hospital signaling. ✓ Bear in mind the fact that, while there may be several ways of accomplishing apparently the same results, there is always one way that surpasses all others. ✓ That way is the right way. ✓ Research, inquiries, field work, manufacturing details. ✓ Those are the things that count. ✓ Edwards has been manufacturing electric signaling devices for fifty-seven years. ✓ Hospital signaling equipment without which no hospital can be new and with which no hospital can ever be old. ✓ Standard equipment to cover general requirements. ✓ The ability, experience and willingness to cooperate on special problems. ✓ Every form of electric signaling for the world in general and for the Modern Hospital in particular. ✓ Nurses' Call Systems. ✓ Doctors' Paging Systems. ✓ Nurses' Home Return Call. ✓ Presignal Fire Alarms. ✓ Two types of "In" and "Out" Systems. ✓ All kinds, all finishes, and its all modern up-to-date, the latest you could



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Director for Medical Services, Julius Rosenwald Fund, Chicago

Is the One-Visit Case a Criterion of Adequate Clinic Service?*

By REBEKAH F. DUNNING
Cornell Clinic, New York City

THE incidence of the one-visit case among patients admitted to clinics and out-patient departments has been frequently cited as a criterion of adequacy of service. There are, however, few systematic or intensive studies that present the actual facts concerning the one-visit patient. One report was issued in 1923 under the auspices of the Associated Out-Patient Clinics of the City of New York.[1] This was based on studies made in eight pediatric clinics. It was found that, out of 1,600 cases, 896, or 56 per cent, made one visit. Bradbury,[2] in a thorough and intensive study of a small group at the Cornell Clinic, also refers to the number of patients who did not satisfactorily complete treatment.

In attempting to analyze a number of problems concerning medical administration at the clinic of Cornell University Medical College, it was hoped that a study of one-visit cases might offer practical information as to the adequacy of the medical service of the clinic. Accordingly in 1926 and 1927 a study was made of 1,284 cases. This study followed two lines of approach—facts concerning medical administration and facts concerning medical service. Of the 1,284 cases studied, 37 per cent were one-visit cases. It was found, moreover, that a large number of the one-visit cases either were recorded as having been closed unsatisfactorily or else there was no record as to their final disposition.

To obtain more accurate results, it was suggested that a similar study be made of a larger sample. The case records of 5,000 new patients admitted to the clinic between January 1 and April 30, 1928, were selected for study. This sample comprised nearly 90 per cent of the new treatment cases admitted to the clinic during that period and, therefore, was considered large enough to warrant positive conclusions. In order to eliminate other factors, patients sent to Cornell Clinic for diagnosis or consultation purposes were omitted. The sample, therefore, included only treatment cases not under the care of any outside physician and referred only to the parent clinic or to that department to which the patients were first admitted. The printed schedule card used in making this study ensured accuracy of tabulation and, in the absence of mechanically sorted punch cards, offered a rapid and concise method of compiling data.

A possible source of error may exist in the case histories from which the facts were compiled. There is, unfortunately, considerable divergence of opinion among the clinic personnel as to how the actual disposition ought to be designated. In several departments the one-visit

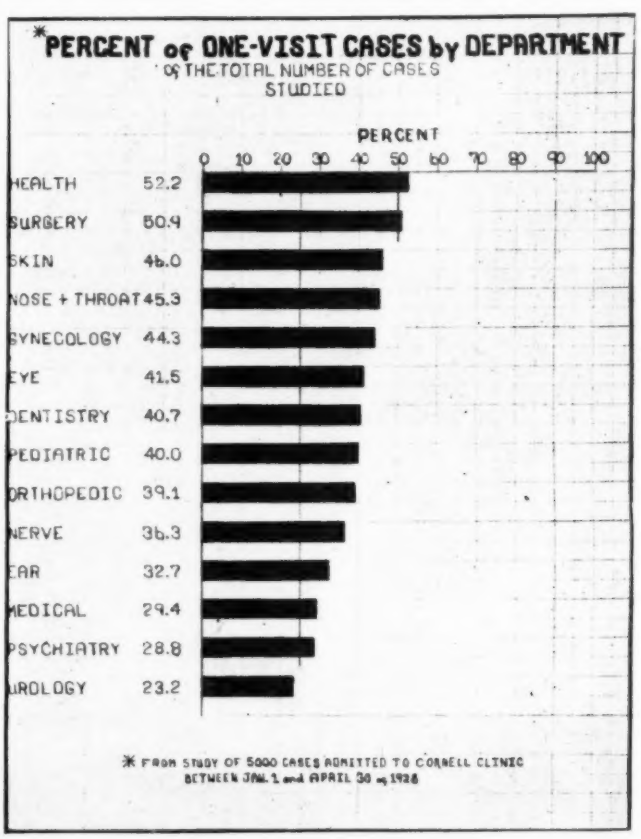
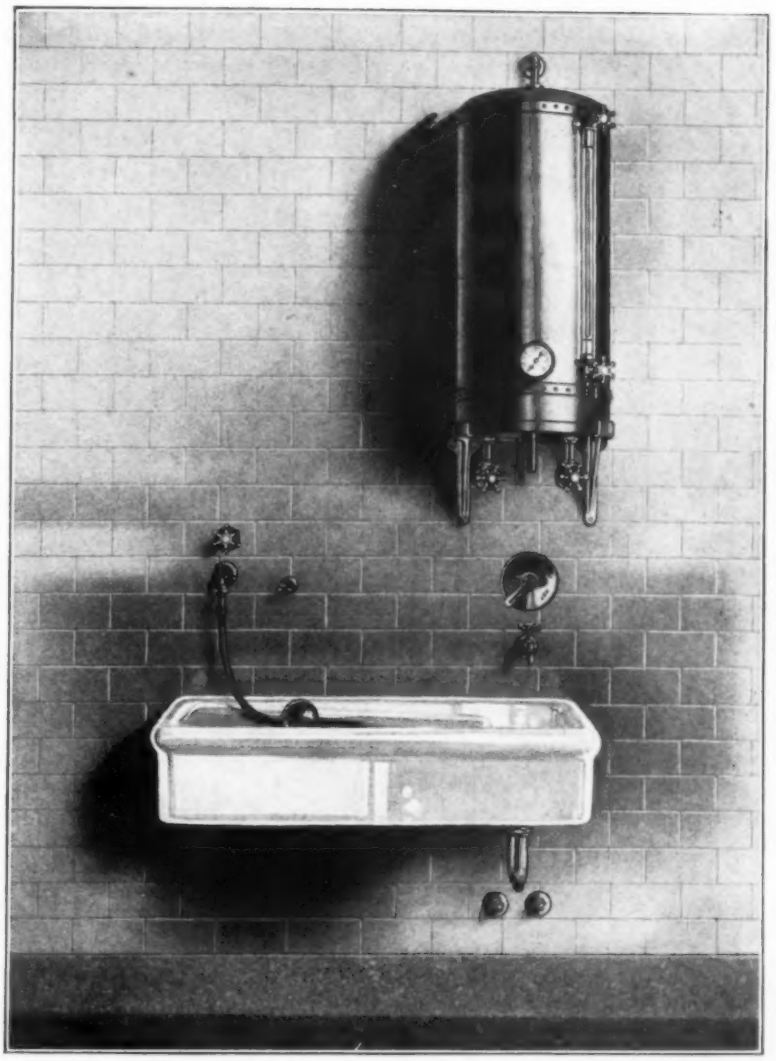


Chart 1.

*A study made in the clinic of the Cornell University Medical College, New York City.

[1] Annual report for 1923, Associated Out-Patient Clinics of the City of New York.

[2] "What Constitutes Adequate Medical Service?" Samuel Bradbury, M.D., the Committee on Dispensary Development, United Hospital Fund of New York, December, 1926.



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patients originally recorded as unsatisfactorily closed, were referred to members of the medical staff for review. In a fairly large proportion of such cases the medical referee decided that, from the medical point of view, the case had been satisfactorily closed. Even within departments a divergence of opinion existed as to what actually constituted a satisfactory disposition. This is a situation where standards of interpretation are difficult to formulate. With due consideration, however, of variations in the material studied, it is believed that the data obtained from these 5,000 cases give a fairly accurate picture of the medical administrative problem as it exists.

The 5,000 cases studied were divided into one-visit cases, or those making only one visit, and several-visit cases, or those making more than one visit. Of these cases, 1,953, or 39.1 per cent, made only one visit in the parent clinic and 3,047, or 60.9 per cent, made several visits. The study of 1,284 cases made in 1926, already referred to, showed that 37 per cent made one visit, which is only 2.1 per cent less than was found in the present study. This seems to indicate that between 35 per cent and 40 per cent of the new treatment cases admitted to the clinic make only one visit.

Chart I shows the distribution of one-visit and several-visit cases among the fourteen departments in the clinic. From this it may be seen that the one-visit case is more common in some departments than others. In the departments of health examinations, surgery, skin, nose and throat, gynecology, eye, dentistry and pediatrics, from 40 to 50 per cent of the new patients make one visit only. The departments of medicine, psychiatry and urology have the lowest percentage of one-visit cases and consequently the greatest number of cases making several visits. The departments of orthopedics, neurology and ear have approximately the same proportion of one-visit cases as does the clinic as a whole.

It is natural that the department of health examinations should have the greatest number of one-visit cases since the service there is intended to offer only examinations and hygienic advice for those who are apparently well. It is gratifying that 85, or 47.8 per cent, of the 180 health cases studied returned for check-up examinations. The eye department is one that would be expected to have a high percentage of one-visit cases, but in the surgery, nose and throat and dentistry departments, and especially in the skin, gynecology and pediatrics departments where continuous treatment is necessary in many instances, such a high percentage calls for inquiry.

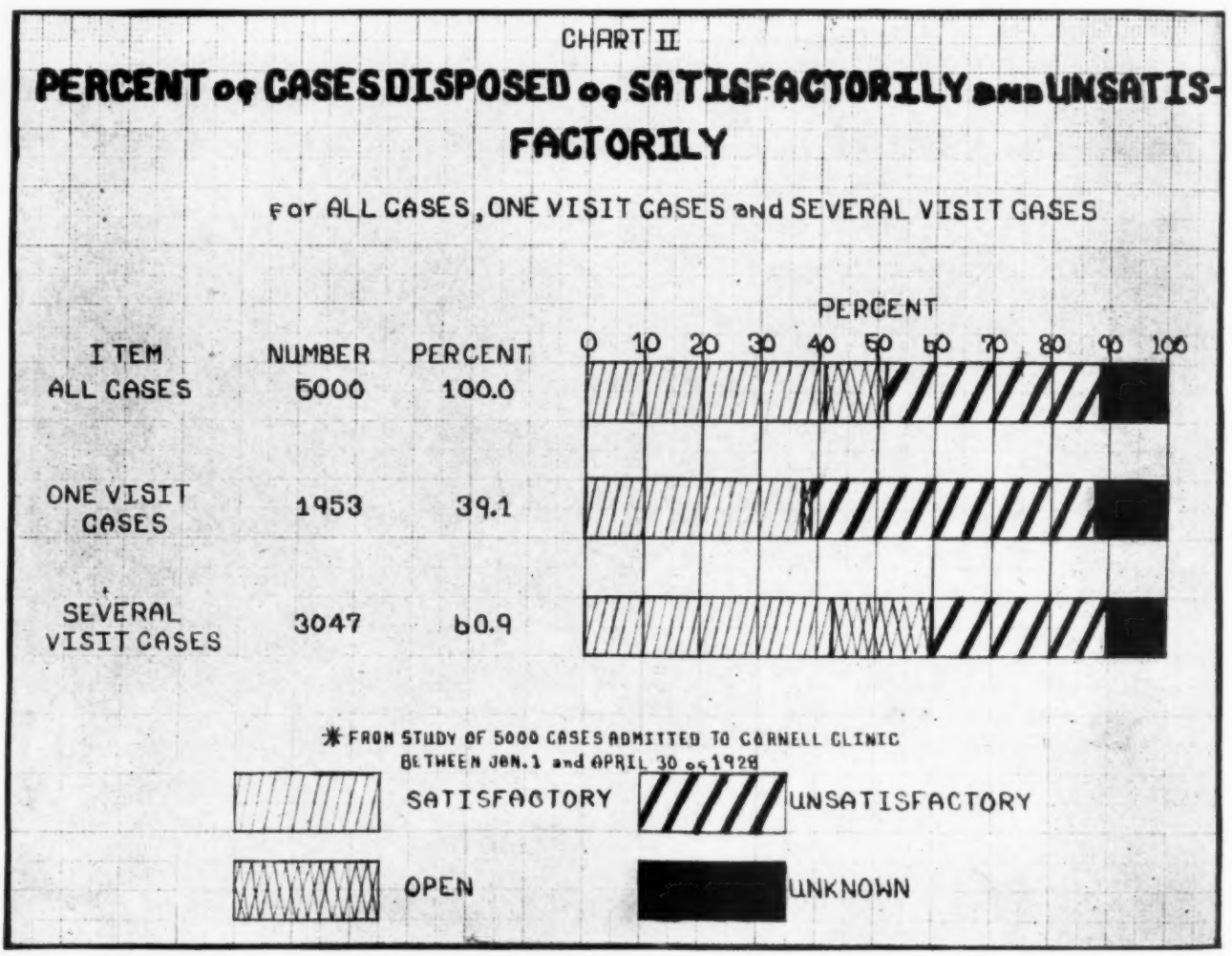

Chart 2.

Chart II shows that of the 5,000 cases studied, 40.9 per cent were closed satisfactorily, 10.7 per cent were active, suspended or lapsed at the time the study was made, 37.2 per cent were closed unsatisfactorily and in 11.1 per cent of the cases the disposition was unknown either because it was not recorded or because the record was incomplete. Dividing the 5,000 cases again into the one-visit case and the several-visit case, it is found that 61.3 per cent of the one-visit cases were unsatisfactorily disposed of or fell in the unknown group, while 40.1 per

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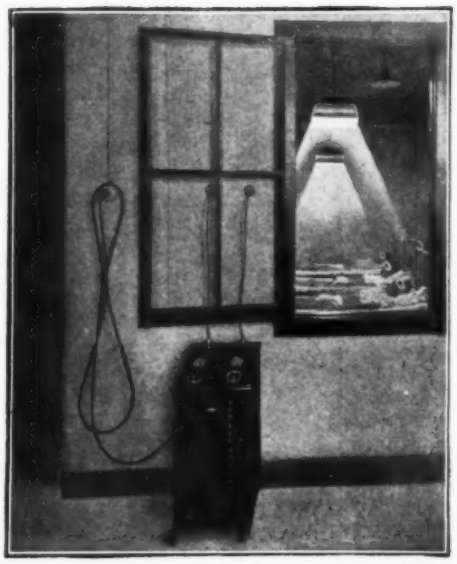

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cent of the several-visit cases were unsatisfactory or unknown. This seems to indicate that the one-visit case is more likely to be unsatisfactorily disposed of than the several-visit case.

Dispositions made by the various departments on the 5,000 cases studied are shown in Chart III. It is interesting to note that the greatest number of one-visit cases occurred in the nine departments whose unsatisfactory and unknown group composed 50 per cent or more of the number of total cases treated there. Thus the departments of medicine and ear, which show approximately 30 per cent of one-visit cases, have a low unsatisfactory and unknown group, but the psychiatry and urology departments, which also have a low one-visit group, show a high unsatisfactory and unknown group, an exception to the general rule.

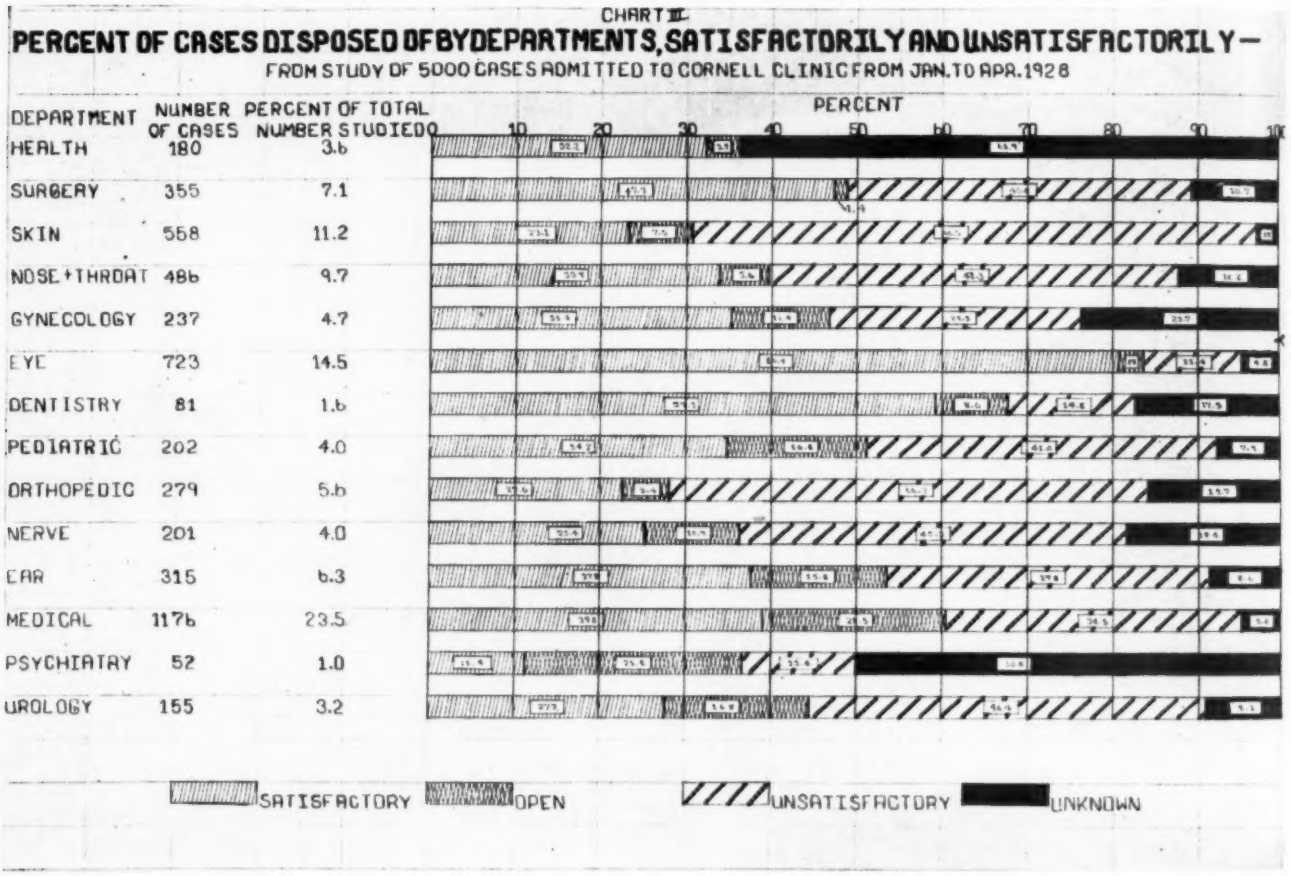

Chart 3.

In an effort to discover why 39.1 per cent of the cases should have made only one visit, the economic status of the one-visit case as compared to the several-visit case was studied. A scale based upon the three following principles is used as a guide for admission to Cornell Clinic: income of the individual or family; size of the family or other responsibilities of the patient; usual cost, at private rates, of the kind of medical care required in the individual cases.

The study of 1,284 cases made in 1926 showed that in 25.3 per cent of the cases the disposition either was not recorded or the record was incomplete. The present study indicates that only 11.1 per cent of the cases studied fell in this group, a decrease of 14.1 per cent over the previous study. This is a decided improvement on the part of the departments in making proper progress notes in clinical records.

Of the 5,000 cases studied, 3,110, or 62.2 per cent, were found to be economically satisfactory while 1,210, or 24.2 per cent, had incomes below the monetary limits of the scale referred to in the preceding paragraph. There were 680 cases in which the income information given on the chart was too incomplete to be used in any computation. Omitting, therefore, these incomplete cases, it is found that of the 3,110 cases that were economically satisfactory, 1,201, or 38.6 per cent, were one-visit cases and 1,909, or 61.4 per cent, were several-visit cases. Of the 1,210 cases whose incomes were below the monetary limits of the Cornell Clinic scale, 483, or 39.9 per cent, made one visit and 727, or 60.1 per cent, made several visits. A question arises as to whether there is any important variance in the disposal of these two groups—that is, does the economic status of the patients in any way affect the number of visits and the dispositions made? The figures computed from the histories studied may throw some light on this problem:

1. Of the 1,909 several-visit cases that were within or above the Cornell Clinic income scale, 1,162, or 60.8 per cent, either were disposed of satisfactorily or were active at the time the study was made and 747, or 39.2 per cent, were unsatisfactorily accounted for.

2. Of the 727 several-visit cases that were below the monetary limits of the income scale, 413, or 56.8 per cent, were satisfactory or open and 314, or 43.2 per cent, were unsatisfactorily accounted for.

3. Of the 1,201 one-visit cases that were within the economic limits of the income scale, 468, or 38.9 per cent, were satisfactorily accounted for and 733, or 61.1 per cent, were unsatisfactorily accounted for.

4. Of the 483 one-visit cases that were below the

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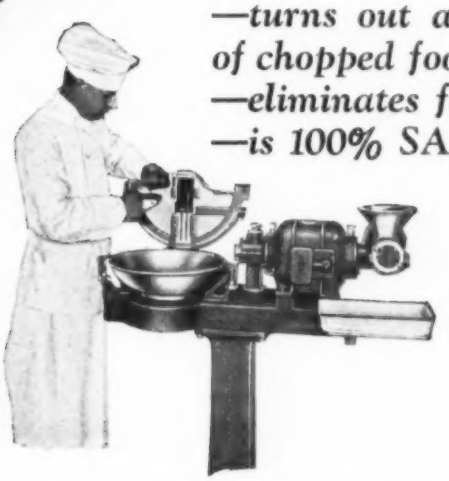

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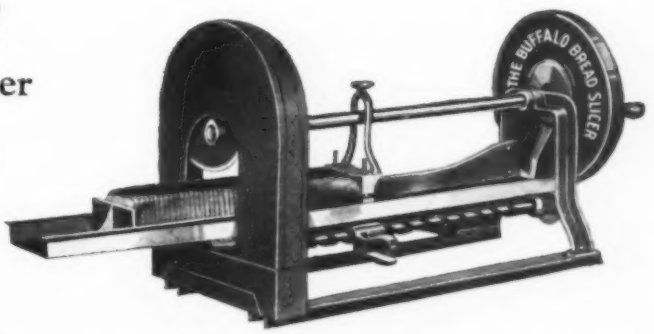

economic limits of the income scale, 161, or 33.3 per cent, were satisfactorily accounted for and 66.7 per cent were unsatisfactorily accounted for.

It can be safely concluded then that approximately one-fourth of the patients admitted to Cornell Clinic are economically below the income scale, that approximately 40 per cent of the cases admitted with incomes below the clinic scale make only one visit and that about the same number of unsatisfactory dispositions occur whether the income is below or within the scale. In both the one-visit and several-visit groups there was a difference of only 5 per cent between the cases disposed of unsatisfactorily that were within the monetary limits of the scale and those disposed of unsatisfactorily that were below the scale. It seems, therefore, that although a case admitted to the clinic with an income below the scale is likely to make only one visit, this low income does not seem to affect to any great extent the disposition that may be made of the case. A low economic status, then, may not be considered an important factor in the one-visit incidence at Cornell Clinic.

The facts found in this study of 5,000 new treatment cases admitted to Cornell Clinic between January and April, 1928, bring up definite questions concerning the one-visit case. What, for instance, is the problem of the one-visit case for the clinic as a whole?

It has been pointed out that 1,953, or 31.1 per cent of the 5,000 cases, made only one visit to the clinic. Of these 1,953 one-visit cases, 38.7 per cent were satisfactorily disposed of, but 61.3 per cent were either unsatisfactorily disposed of or fell in the unknown group. Of these 1,953 one-visit cases, 961 were unsatisfactorily disposed of and in 236 cases either no disposition was recorded or the record was incomplete. In other words, 961 one-visit cases, or 19.2 per cent of the 5,000 cases studied, should presumably have made more than one-visit and 236 one-visit cases, or 4.7 per cent, should probably have returned, although this fact is not certain. It is known that "the expense in skill, time and money required to make a diagnosis and plan treatment at a patient's first visit is relatively high, therefore, from an economic as well as a service standpoint."[1] The loss of nearly a fourth of the patients after one visit is serious and, unless it can be properly explained, is an indication that the clinic is falling short of its original ideals of service. It may be that the lack of standards in the methods of disposing of cases and the inadequate keeping of records account in part for this loss on one-visit cases, leaving a fraction actually medically incomplete. This, however, is difficult to determine.

Departments	*Percentages of one-visit cases unsatisfactorily accounted for*
Surgery	33.8%
Skin	41.0%
Nose and Throat	37.0%
Gynecology	33.3%
Eye	7.9%
Dentistry	14.8%
Pediatric	23.3%
Orthopedic	37.1%
Nerve	22.9%
Ear	17.1%
Medical	14.8%
Psychiatry	15.4%
Urology	12.9%

Concerning the problem of the one-visit case in the various departments, the accompanying table shows by departments[1] the percentages of one-visit cases that were unsatisfactorily accounted for.

The foregoing figures show clearly that, although the clinic as a whole lost nearly a fourth of the one-visit cases, five of the departments lost from 33.3 per cent to 41 per cent of the one-visit cases, emphasizing the seriousness of the problem. The figures show, however, that eight departments lost less than a quarter of their patients. One department lost as few as 7.9 per cent and several departments only 12 per cent to 15 per cent. Just why the departments of surgery, skin, nose and throat, gynecology and orthopedics should lose such a high percentage of their one-visit cases is hard to determine, but it is a matter that should cause serious thought on the part of the administration. These departments, interestingly enough, are among those that had a large number of one-visit cases.

Irregularity Lessens Efficiency

The average attendance in the skin department is thirty patients a session, but in the evenings the attendance is frequently as high as seventy patients. This irregularity in intake naturally causes less efficient service. There is little follow-up work done in the skin department except in the luetic cases, which may account in part for the high percentage of unsatisfactory one-visit cases. In the nose and throat and orthopedic departments, which run fairly heavy clinics, many patients feel better after one visit and if their complaint is more or less slight, they decide for themselves that further visits are unnecessary.

Possible explanations for the unsatisfactory one-visit case in all departments might be: (1) Patient came only for an opinion or the confirmation of a diagnosis previously made; (2) came for advice; (3) felt better after the first visit and decided that further treatment was unnecessary; (4) was dissatisfied with the treatment he received; (5) could not afford further visits.

The fifth reason listed brings up an important and interesting aspect of the one-visit case—the economic status of one-visit cases compared with that of several-visit cases. The results of the study would seem to imply that the economic status of patients coming to the clinic for treatment has little effect upon the number of visits made and the kind of service rendered. But it is a question whether the economic scale now in force, which was drawn up in 1921 and is used as a guide for admissions, is still practical. An economic scale that would admit patients according to their standards of living or their actual income, rather than their money income, would perhaps be more reliable.

This study of the one-visit case has presented many facts and has raised many problems that are significant in evaluating the type of service offered at Cornell Clinic.

Many factors enter into the problem of the one-visit patient, some of which have been listed previously. It is important to point out again that some latitude must be extended in interpreting the dispositions as recorded on the charts. It has been mentioned already that the recorded disposition does not always indicate the real medical disposition of the case. For example, the following figures were selected from three departments and show clearly that the opinions of the medical staff vary considerably concerning what constitutes a completed case.

[1] Annual report for 1923, Associated Out-Patient Clinics of the City of New York.

[1] The health examination service has been omitted since it naturally would have a large number of one-visit cases.

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In the department of surgery, 355 cases were studied. Of these, 119 made only one visit and were recorded as unsatisfactorily closed. The records of these 119 cases were reviewed by the five members of the surgical staff who had treated these patients. In their opinion forty-four, or 36 per cent, were completed and seventy-five, or 64 per cent, uncompleted from the medical point of view. These same 119 case records were then reviewed by the chief of clinic in that department who noted that, in his opinion, ninety-nine, or 89 per cent of the 119 unsatisfactory one-visit cases were completed from the medical point of view.

A similar review was made of 201 case records in the department of neurology. Forty-six of these had been originally recorded as one-visit cases unsatisfactorily closed. After reviewing the records, the members of the staff were of the opinion that all of these forty-six cases were medically incomplete and should have been closed unsatisfactorily from the administrative point of view.

Similarly in the nose and throat department, out of the 486 cases studied, 220 made one visit, 180 of whom were recorded as closed unsatisfactorily. These 180 cases were reviewed by the chief of the clinic who gave it as his opinion that from the medical point of view sixty-nine, or 38 per cent, were complete and satisfactorily closed while 111, or 61.7 per cent, had not been satisfactorily completed. These supplementary studies in three departments demonstrate the need for an agreement between clinic workers as to the real meaning of the terms. Histories should be written in a way to avoid the necessity of having to refer to the examining doctors for information concerning the dispositions.

To ascertain whether these studies possessed any practical value to the clinic, it was suggested that a study be made of an unselected sample of cases admitted since the circulation of this report, and that the results of such a supplementary study be compared with those obtained in the original analysis. Accordingly there were selected the case records of 400 patients admitted directly to the department of surgery between September, 1928, and April, 1929. These 400 cases represented about 40 per cent of the total number of new patients admitted to the department of surgery during this period. Since the primary object of this study was to check up on the final disposition and to determine the status of unsatisfactorily closed cases, those cases that were still active were omitted.

Disposition of Surgical Cases Shown

As far as the department of surgery was concerned, the studies previously made had produced a definite effect. The one-visit group still remained high but only 5.2 per cent did not show a conclusive record as to final disposition and only 29.7 per cent of the total number of one-visit cases were recorded as unsatisfactorily closed. As for the several-visit cases, final disposition had been definitely recorded in all. Only 29 per cent were recorded as unsatisfactorily closed. This does not necessarily indicate that the patient received better medical care, but it would permit the conclusion that the administrative and medical services of the department were cooperating in a way to ensure more complete and accurate clinical records and progress notes.

With no established standards, there is no basis upon which the results of this study of Cornell Clinic may be compared. The only similar study is the one that has been referred to, published by the Associated Out-Patient Clinics, New York City. In that study it was found that 56 per cent of the patients made one visit as compared with 40 per cent who made one visit to the department of pediatrics, Cornell Clinic. However, since there are no accurate figures even for private practices, it is impossible to know what ought to be the accepted number of one-visit cases or what ought to be the proportions of unsatisfactorily closed cases under ideal conditions.

This study has shown definitely that the one-visit case does offer indications as to the adequacy of medical service and that, within certain limits, an excess of one-visit cases would justify the assumption that medical administrative machinery is not attaining the highest degree of efficiency. In the case of Cornell Clinic, the study resulted in discovering and correcting several apparent shortcomings. Quantitatively, the one-visit index cannot be accepted as a criterion until a larger number of institutions have made similar studies and certain standards have been established. It is hoped, therefore, that this contribution may stimulate investigation by other organizations.

Cardiac Clinic Plays Important Part in the Diagnosis of Heart Disease

"The explanation of the rising death rate from heart disease," in the words of the director of the cardiac clinic, New York Post-Graduate Medical School and Hospital, New York City, "is that we do not know." The chief difficulty in assigning the cause, he says, lies in the fact that heart disease, so-called, is not just one disease. The death rate is due to a group of many diseases of the heart, some of which we do know and some of which we do not know the reason for.

He continues: "The publicity given to heart disease in recent years has for its object the education of the public and undoubtedly has focused the attention of many people on the possibility that they may have the disease. Frequently, however, some of them allow themselves to drift into a state of neurasthenia, imagining every sensation they have to be a symptom of real cardiac trouble. Such persons should report to their own physicians or to a recognized cardiac clinic for an accurate diagnosis."

The work of the cardiac clinic, New York Post-Graduate Hospital, is well known. The organization of the clinic is studied by heart students from all parts of the world. The clinic is equipped with a laboratory, a fluoroscopic room and an electrocardiograph, without which a complete diagnosis of heart disease is often impossible. It has also consultation facilities with all of the specialties. On the average 800 cases a year are examined and cared for at the clinic.

Arranging the Hospital for Group Nursing Service

Special architectural arrangement for group nursing service makes such a service more feasible, according to M. Della DeLong, Grace Hospital, Detroit, speaking at the American Hospital Association meeting in Atlantic City.

In constructing new buildings with group nursing in mind, the number of patients for group assignment should be determined, Miss DeLong said, with each ward accommodating two groups and with ample utility and nurses' rest rooms provided. The more centralized the service, the greater is the opportunity for the nurse to give individual attention to her special group of patients.

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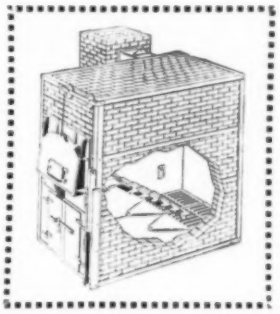
Complete and sanitary riddance of all incinerator smells, dirt and danger!

The new Hospital Type Incinor is gas fired. A revolutionary invention, the Goder Step-Grate, exclusive in Incinor, creates a natural draft of greater volume than is possible in any other type incinerator, assuring complete and rapid combustion at minimum cost of operation. Before escaping into the flue all gases must pass through a uniquely designed combustion chamber where all noxious matter is totally destroyed.



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HOSPITAL EQUIPMENT AND OPERATION

With Special Reference to Laundry, Kitchen and Housekeeping Problems

Conducted by C. W. MUNGER, M.D., Director, Grasslands Hospital, Valhalla, N. Y.

Chromium Nickel Alloy Is Finding Favor in the Hospital Field

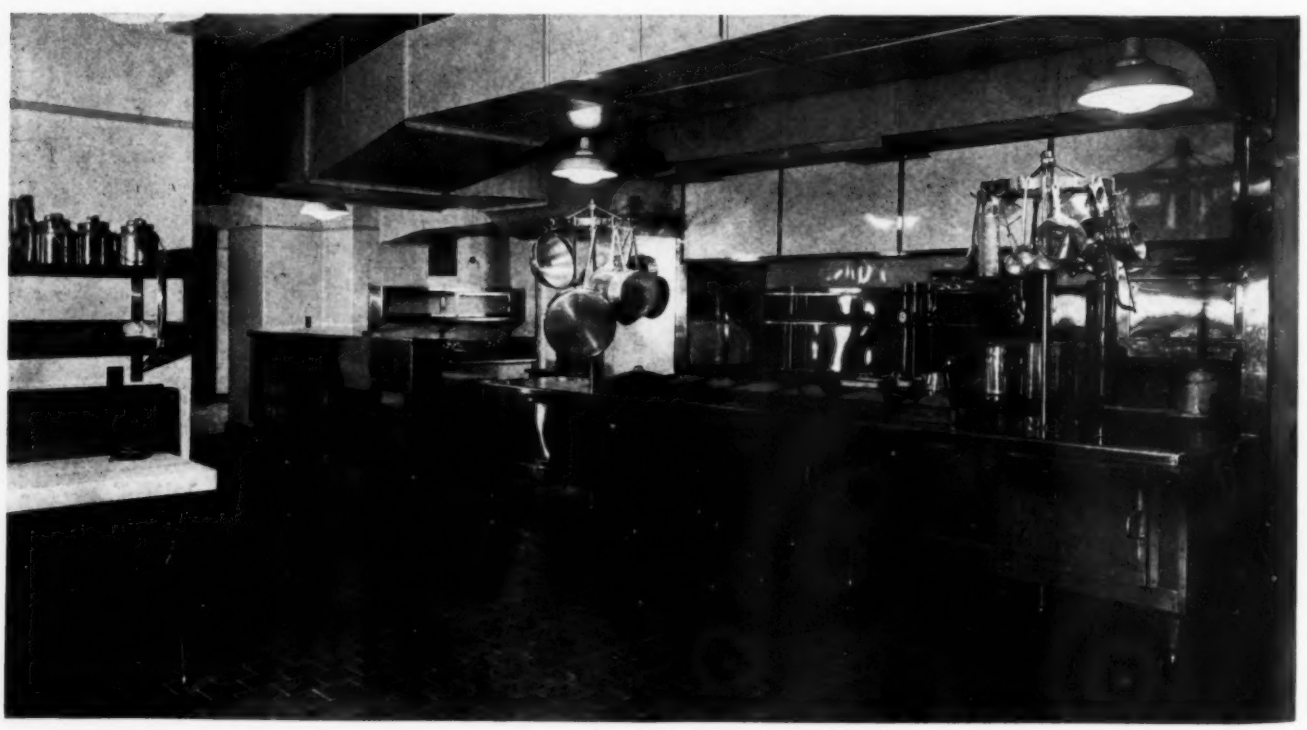
BECAUSE of its almost complete immunity to organic acid reactions, because of the ease with which it is cleaned and because of its resistance to stain and tarnish, a new metal known as chromium nickel austenitic alloy is coming more and more to be used in hospitals, hotels, cafeterias, clubs and other institutions. Because of the absence of aluminum, copper, lead, zinc and tin in its composition, chromium nickel alloy has been declared a safe metal, in that acids found in vegetables, fruits, dairy products, meats and fish have no effect upon it.

Chromium nickel alloy may be analyzed as follows:

Chromium	17 to 20%
Nickel	7 to 10%
Carbon	Under 0.20 %
Manganese	Under 0.50 %
Silicon	Under 0.50 %
Phosphorus	Under 0.025%
Sulphur	Under 0.025%

This combination makes what the metallurgist terms a full austenitic alloy since it is nonmagnetic and is nonhardening to heat treatment. The chromium and nickel give chromium nickel alloy a tensile strength approximately double that of mild steel and a much greater resistance to abrasion, scratching and denting.

It is difficult to imagine a cook's or dietitian's table or such equipment as cafeteria trays, saucepans, milk containers, mixing bowls, beverage mixers, cake pans or compartment plates that will not spot, rust or tarnish; yet chromium nickel alloy, properly fabricated, is meeting this test in some of the best known hospitals and institutions in the country. Users of chromium nickel alloy say that it is as easily cleaned as plate glass. In fact, the manufacturers of the alloy say that it has only to be given the same care and attention as plate glass, needing only to be cleaned with soap and water and occasionally with any one of the standard cleansing preparations.



Chromium nickel alloy was chosen for the kitchen of the new Passavant Memorial Hospital, Chicago.

CHARLES SUMNER WARD

(1858-1929)

MR. WARD was the originator of the present very widely used type of short-term money-raising campaign for financing hospitals. The care of an almost inestimable number of sick and injured in hundreds and probably thousands of hospitals in the United States, Canada and Europe has been made possible by the genius of Mr. Ward in the development of a system of money-raising that has diverted hundreds of millions of dollars to the hospital field. It was he who was chosen by President Wilson's war council to direct the great National Red Cross campaigns, the one of 1917 developing $110,000,000 and the one of the next year developing $170,000,000.

Thereafter, for the term of the war, he counseled and directed the big efforts of this character, and at the conclusion of the war organized a firm and staff of money-raising specialists who have given to hospitals, colleges, denominations and churches — all worthy and approved philanthropies —the benefit of Mr. Ward's creative genius and accumulated experience in the field of money-raising.

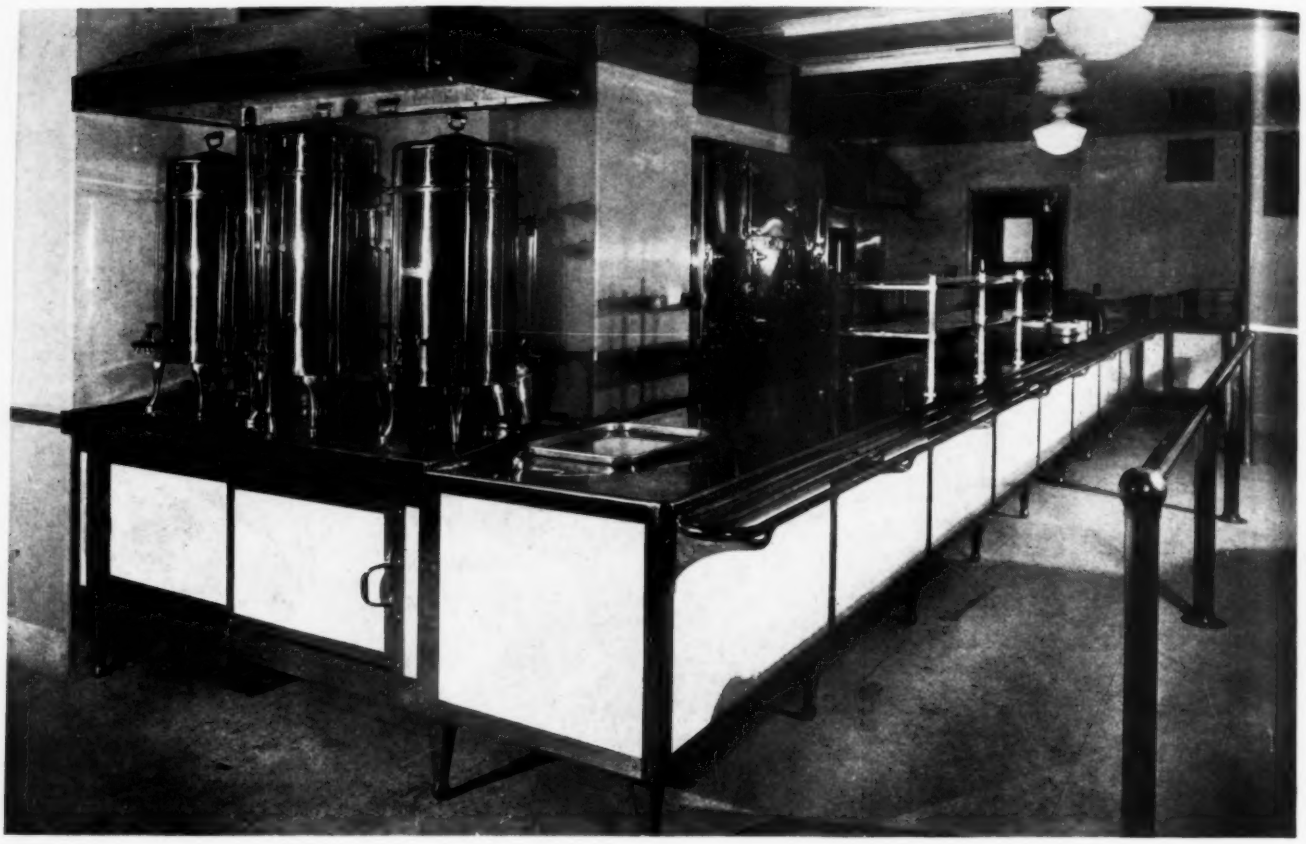
Generous men and women have supported to the almost inconceivable total of more than a billion dollars the causes for which Mr. Ward and his associates have directed campaigns. There is no doubt that Charles Sumner Ward was instrumental in turning more money to the support of the finer things of life than any man who has ever lived.

Mr. Ward's wish that his work might go on will be fulfilled. He derived great satisfaction from living to see the method he originated put to such useful purposes. Before his death he arranged with his partners that his name should continue to be used in the work he loved, and by associates with whom he has been surrounded for the past ten years.

WARD, WELLS AND DRESHMAN

475 Fifth Avenue

New York City

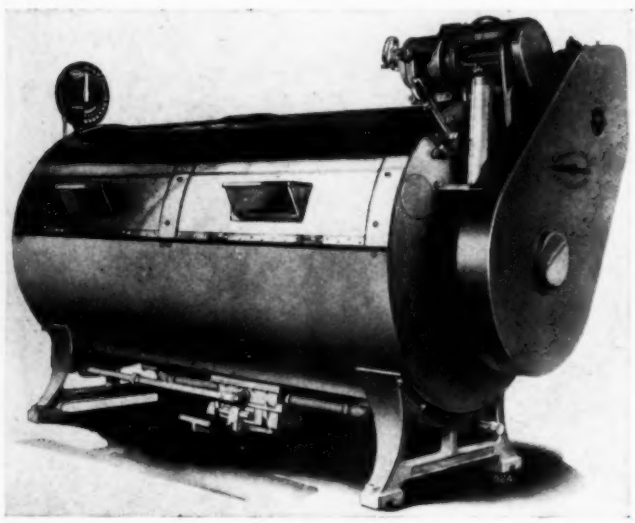


Chromium nickel alloy is also used throughout the cafeteria of Passavant Memorial Hospital.

Since hospitals and other institutions have a goal in common with the dairy industry in seeking to eliminate harmful bacteria, an exhaustive test made several months ago by the dairy industry to find the best available metal for dairy equipment of all kinds will be of widespread interest. In the test, nineteen different metals were used, ranging from black iron and galvanized iron through the coppers, both bare and tinned, into the aluminums and aluminum alloys, nickel copper alloys, pure nickel, straight chromium irons and the chromium nickel alloy.

From the tests it was discovered that the metals and alloys that had been in use were decidedly soluble in the dairy products and left deposits of metallic salts that were responsible for the off-flavors and spoilage of the products, and that these metals and alloys were also more or less soluble in the acids and alkalies of the compounds used in cleaning them. The *Journal of Dairy Science* for March, 1929, gives the result of the tests in the following paragraph:

"Chromium nickel alloy showed no visible corrosion in the dairy products and there was practically a complete absence of loss of weight. In fact chromium nickel alloy ranked best of any of the metals under study. In liquids (acid solutions) and under treatments that caused serious corrosion of the other metals, chromium nickel alloy was either not affected at all, or led the list in point of resistance to such corrosion."

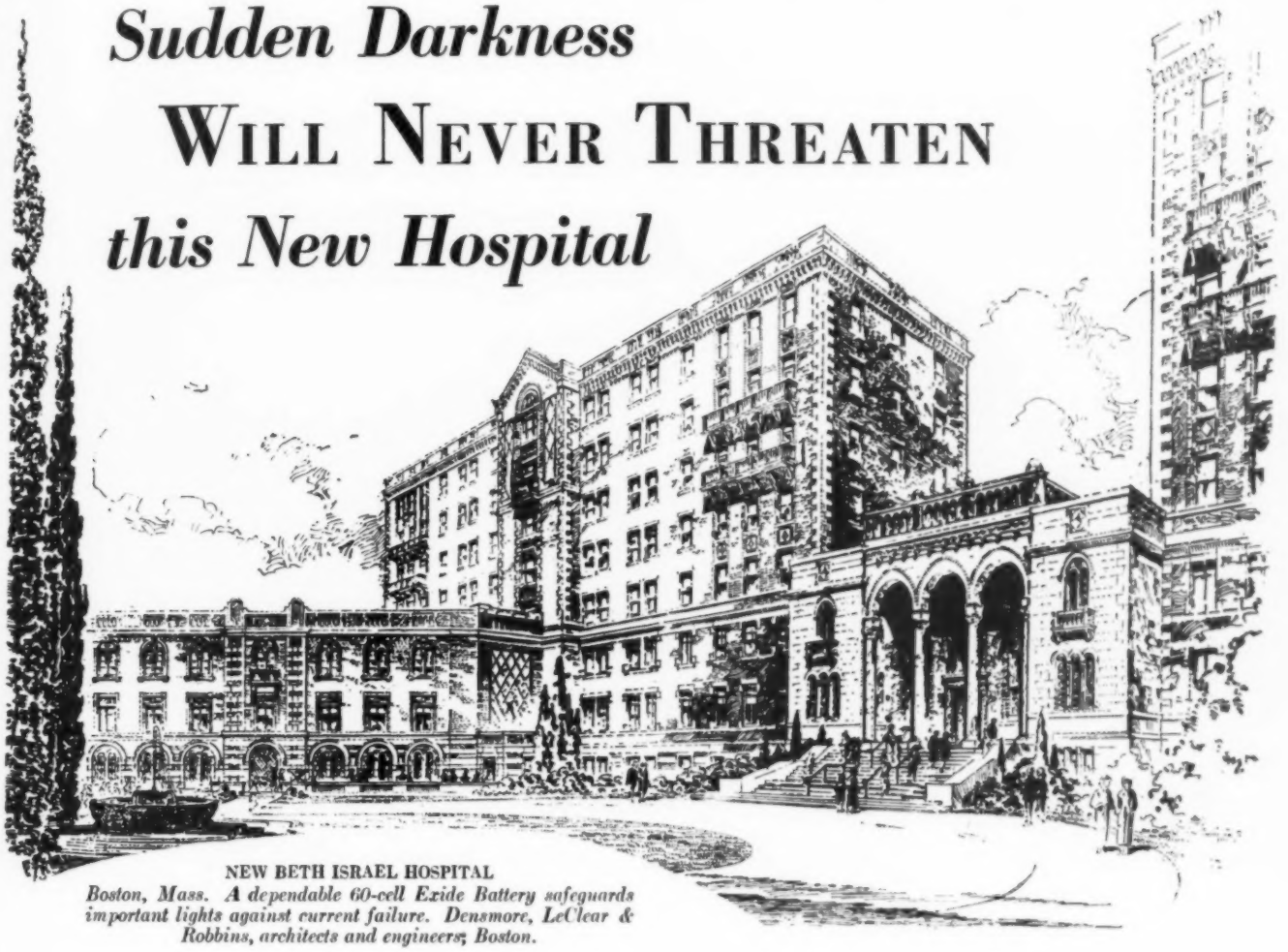


A washer with inner cylinder of chromium nickel alloy.

Not only is chromium nickel alloy coming into rapid favor in the manufacture of dairy equipment, but hospital buyers are becoming aware of its superior qualities. It is expected that there will be available soon the following chromium nickel alloy equipment for hospitals: pus pans, bedpans, sponge boxes, operating tables, instrument tables, bedside tables, sponge racks, solution basins, instrument trays, sterilizers, dressing tables, delivery tables, incubators and autopsy tables.

Chromium nickel alloy has varied uses. Since tests have proved that it will weather the severest atmospheric conditions without rust and with a minimum of cleaning, it has been used in a number of ways on the new pedestrian bridge that connects the Chicago Daily News building and the Chicago and Northwestern railway station in Chicago. The window frame, window sash and the entire outside sheathing of this bridge are of polished chromium nickel alloy. The equipment for the restaurant and cafeteria in the station building and the equipment for the restaurant in the new Chicago Daily News building are both of chromium nickel alloy.

Sudden Darkness WILL NEVER THREATEN *this New Hospital*



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Beth Israel Hospital, Boston, guards against power failure with Exide Emergency Lighting

CONSIDER the consequences of sudden darkness in your hospital. Confusion and serious dangers might be the result. That's why the officials and architects of the great new Beth Israel hospital chose Exide Emergency Lighting Batteries . . . to safeguard patients, visitors and staff against current failure.

Should the normal electric current fail, for any reason, important lights continue to burn steadily . . . brightly. They are switched to Exides *instantly and automatically* . . . without a hand touching a switch. In the Beth Israel an Exide protects lights in the operating rooms, accident rooms, hallways and stairways.

Exide Emergency Lighting Batteries can be had in a wide range of sizes and prices to meet your needs and your budget. Furthermore, the devices necessary to control and automatically keep these batteries in a charged condition are simple and foolproof . . . no expert electrical knowledge is required, your present staff can easily attend them.

A letter will bring an experienced Exide representative to consult with you on any phase of emergency lighting. Consultation entails no obligations. Write today . . . a postcard will do.

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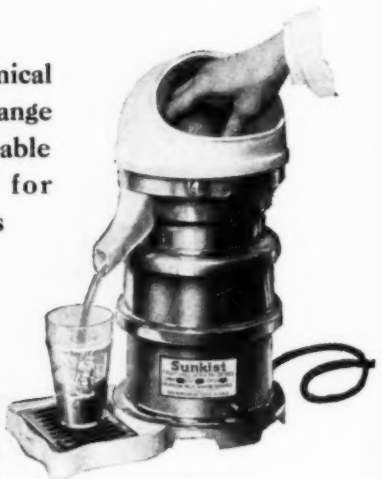

WHEN the body is healing, it needs help. Orange juice is a great aid, doctors tell us. They agree that as a refreshing drink for invalids, orange juice can't be equaled.

And there's no healthful drink that's more palatable and refreshing. But with ordinary methods orange juice is difficult to extract. Hand squeezing is wasteful and unsanitary.

The Sunkist (*electric*) Fruit Juice Extractor is the accepted way for hospitals to get orange juice now. It gets *all* the orange juice in seconds—clean—sanitary—economical.

We sell the Extractor at cost price because it aids our fruit business. So you make a tremendous saving when you buy a Sunkist Extractor.

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Purchasing the Coal Supply for a Hospital

By PHILIP LOVEJOY, HAMTRAMCK, MICH.

At this time of the year many hospital executives are considering the purchase of coal.

The purchase of coal has so many ramifications that it has been thought wise to set forth some adequate methods of buying this commodity. Naturally a contract is to be entered into. Specifications, therefore, will have to be obtained for contract stipulation. There are two ways to obtain these. The first way is simply to set forth the types of heating units operated by the hospital and ask the prospective vendors to bid on coal that would most adequately permit the heating units to give maximum efficiency. It is further pointed out that a good grade of bituminous coal, free from dirt, slate, crop and bone coal will be required, that the mine run must screen 70 per cent lump over 1¼-inch screen and that nut pea and slack must produce 14,000 B.t.u. and contain less than 7 per cent ash, while lump coal must produce 12,000 B.t.u. and contain less than 9 per cent ash. The vendor is then permitted within these broad fields to bid on any type of coal he desires and allowed to set forth his analysis. The engineer of the hospital must then study the bids and recommend purchase to the superintendent.

The second method is to have the engineer make an exhaustive study of the system of heating, in conjunction with heating experts, including both the installers and local industrial engineers, to determine the type of coal that will give the best heat value in that system. All the questions as to type will be set forth in this study but the results only will be sent to the coal vendor. The question of whether the system is high pressure or low pressure will be a considerable factor. If hot air is used, is the air recirculated? How much staff is available for firing or are automatic stokers to be used? What size coal shall be used? Shall it be mine run? Shall it be pulverized and blown through the stokers? Each system will be different and each system must be studied by the maintenance engineer or the person responsible for the heating.

A Method That Has Proved Practical

An example hospitals may follow was the method adopted in the Hamtramck Public school, Hamtramck, Mich., an industrial suburb of Detroit, as a result of a study of the heating system and the results obtained by different methods. The specifications are the result of local study, coupled with expert advice from the engineers of the Dodge division of the Chrysler Motor Corporation together with the best business practices devised by the local authorities, plus some of the ideas developed by the Columbus Board of Education, under the auspices of G. E. Roudebush, assistant superintendent of schools.

The specifications sent out this year for soft coal were pronounced by some of the largest coal companies in Detroit as being the most complete they had ever handled.

The specifications were:

Coal shall be a genuine Harlan coal from the Harlan seam, or equivalent, said coal not to be less than 4-inch lump—duly screened upon arrival in the yards.

Coal shall have an analysis showing:

Ash content not to exceed 3%.
B.t.u. not less than 14,200.
Sulphur not more than 1%.
Volatile matter not more than 40%.
Moisture not more than 3%.
Fixed carbon not less than 55%.

The New French Hospital, too . . . has chosen Keramic Tiles

YOU DERIVE the greatest benefit from Keramic Tiles when the tiles are set by experts. Their skilled workmanship is instantly apparent. Select your tiling contractor on the quality of his work

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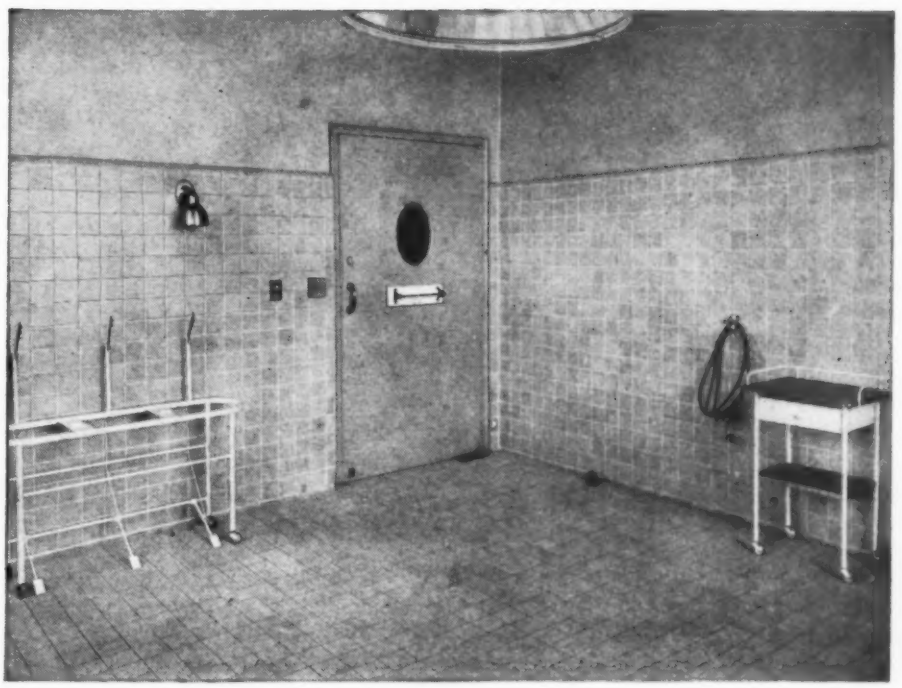
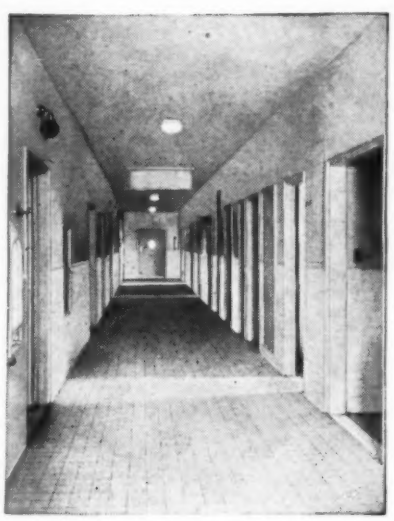
Photos show installation of Keramic Tiles in the operating room and in a corridor of the new French Hospital in New York





LIKE most modern hospitals—the new French Hospital in New York City has chosen Keramic Tiles—real tiles—for the walls and floors of its most important rooms.

Twenty years from now these walls and floors will look just as *new*—will be just as good—as they are today. The annual expense of painting and repairing will have been eliminated . . . the yearly cost of cleaning and maintenance cut to a minimum. And the cheerful gleam of Keramic Tiles will have added a lasting—attractive—"hominess" to the entire hospital.

Thus many hospitals are turning to Keramic Tiles, either in white or *in color*.

With neutral shades of grays and greens in many of their rooms—they are eliminating the cold, depressing atmosphere so noticeable in the old-fashioned hospital . . . bringing an entirely new note of quiet, peaceful comfort.

When you are planning to build or remodel, ask your architect or tiling contractor to show you the many new and successful uses for tiles. They will prove an economical and enduring investment . . . and add a new attractiveness to the building.

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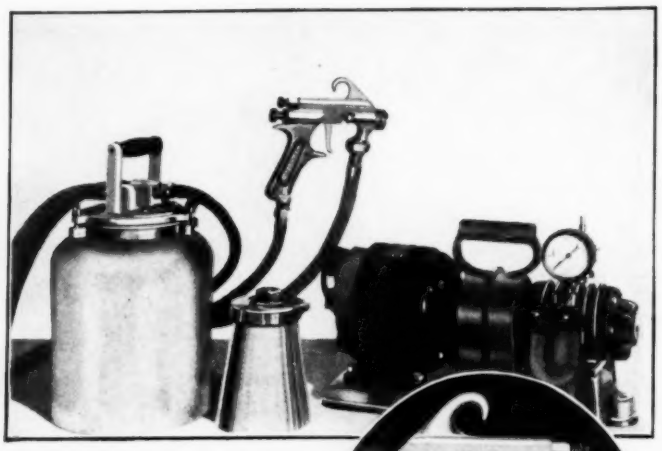

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In hospitals where lower maintenance costs are essential to continued success and growth, this new Sprayit contributes its cost-reducing efficiency and speed. Write for literature completely illustrating and describing the All-Purpose Electric Sprayit.
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These averages shall be derived from tests made by the Detroit Testing Laboratory from samples taken by the board of education from any bin at any time. The manner of taking these samples for the basis of payment and rejection shall be as follows:

At the time of filling the bins one sample shall be taken from each bin and a separate analysis made for each sample so selected. For the basis of adjustment under the terms of this contract the average of the analyses so made shall be the determining factor. A representative of the vendor must be present when the samples are selected but these samples must be taken at random.

The party of the first part shall see that the shipper sends directly to the hospital a duplicate copy of the bill of lading. On arrival the car is to be checked by a representative of the institution and all deliveries from said car shall be checked by a representative of the hospital. In checking the deliveries the representatives of the hospital shall see that coal is taken from the cars mentioned in the accepted bills of lading and that the weights of coal so delivered agree with those on the truck delivery slips.

Weights of coal may be checked by the hospital at the scale maintained by the city of Hamtramck.

The minimum capacity of delivery service under the terms of this contract shall be sufficient to represent a combined capacity of 50 tons per trip.

The dealer is to give at least twenty-four (24) hours' notice of intention to deliver and state time delivery will start.

It may be stated that if there is no one in the hospital who can prepare adequate specifications for the local plant, certainly there are interested industries not far distant that will be glad to help. Engineers of the installation companies will be glad to make recommendations.

Buying Coal Involves Many Considerations

Of course we are assuming that a heating system is already installed and coal is being purchased to fit that system. This article does not concern itself with the selection of new heating plants. That is a different problem. The question of cheaper coal enters into the recommendations. Pulverized coal may be obtained for practically nothing. Freight must be paid. But this coal has to be fed through specially constructed stokers. Are the stokers less expensive in capital outlay and maintenance and interest on the investment than are the hand firing methods? For how many months of the year must fires be maintained? What is the index of labor cost in the community? These questions and the answers to them will help to determine the initial installation. After that, coal is to be specified that will fit the needs of the hospital.

Even after the coal is received it must be analyzed and checked to see that it meets the specifications. A special method of payment will compel this. The best type of contract calls for such a method, because even after that, records must be taken of consumption balanced against the temperature of the outside air and the temperature of the rooms. The cost of raising temperatures one degree must be ascertained to discover whether the plant is operating efficiently. The contract is usually the same as the bid specifications except that the specific analysis as submitted is included. On the acceptance of the bond the purchase order is issued and deliveries begin.

A word should be said about the futility of comparison of specifications or of prices. There are so many variables that comparisons would be more than odious. The

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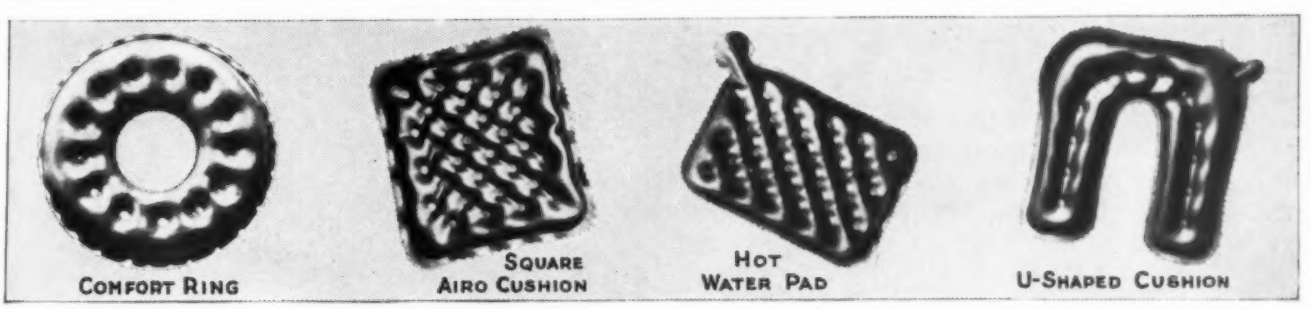

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Here is a complete line of hospital and sick room comfort items—invalid rings, hot water pads, air cushions and mattresses for every purpose. They are made completely of the highest grade *virgin rubber*, vulcanized throughout and cured in the open steam like the finest inner tubes. They are sold with a money-back guarantee of complete satisfaction—at prices commensurate with *finest quality and workmanship.*

These items, made entirely of rubber, are washable, sanitary and easily sterilized. They are soft, buoyant and extremely comfortable. That is why some of the largest hospitals of the country use K & W rings, cushions, water pads and mattresses.

K & W Comfort Products are made of *thicker* rubber. They embody the patented AIRO process of manufacture—reinforced *internally* with truss-bridgework *vulcanized* alternately to opposite sides. That is why they require extremely low air pressure and afford maximum comfort.

All K & W Comfort Products are *guaranteed* to outwear and outlast any other make. The coupon below, pinned to your letterhead, will bring you our *new* hospital catalog—and we'll be glad to send you any of these items for ten days free trial.

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Illustration features Thorner's Improved Three-Compartment Hot Water Plate. Tea Set is seamless with inside rounded bottom and reinforced band around top. Covered Soup Cup with Silver Soldered Handles. Sherbet Dish, Gravy Boat, Individual Napkin Ring and Tray Marker, Bud Vase, Salt and Pepper Shakers and Superior Grade Sectional Flatware.

THORNER BROTHERS

Importers and Manufacturers of Hospital and Surgical Supplies

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NEW YORK CITY

type of heating unit, the type of firing, the type of coal demanded, the ease in filling the bins, the index of purchasing power, the quantity demanded, the speed of delivery and the method of payment are some of these varibles, and unless each of them is duly weighed comparisons would be of little value. It is of value, however, to secure adequate contract regulations for other cities so that methods of purchasing may be compared after due consideration has been given to the valuable factors.

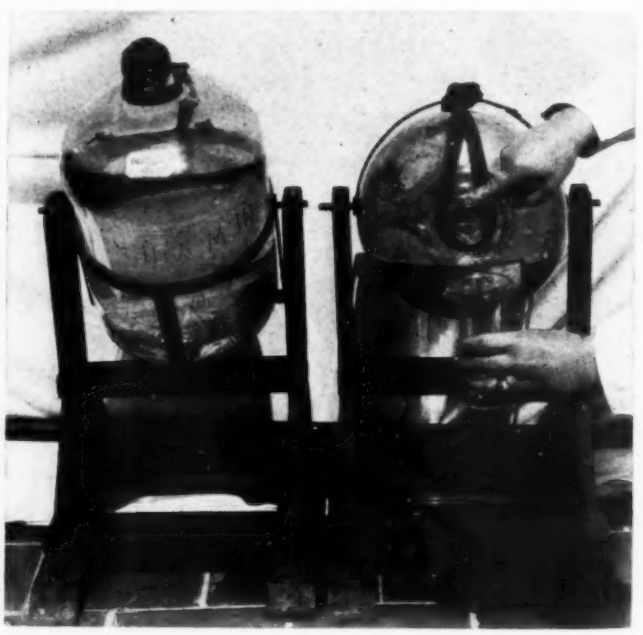
A Device for Holding Large Stock Bottles

By ARNOLD SHAMASKIN, M.D.
Medical Superintendent, Montefiore Sanatorium, Bedford Hills, N. Y.

Liquid medicinal agents that are dispensed from large glass containers in institutions are frequently prepared in quantities of five gallons or more.

Dispensing from a five-gallon container requires considerable physical effort on the part of the pharmacist and exposes the stock bottle to breakage. In order to save labor and prevent breakage, the device described here will be found very useful.

This device consists of a solid wood stand on which is suspended a metal frame hanging on two pivots. The



The bottle can be tilted with one finger.

depth of the frame is such that, when a five-gallon bottle is placed in it, the center of gravity is below the point of suspension even when the bottle is empty, which forces the bottle to an upright position. A leather strap around the neck of the bottle and attached to the metal frame prevents the bottle from slipping when it is tilted for the purpose of dispensing liquids into smaller containers. The operation of pouring from a bottle thus suspended requires very little effort. It can be tilted with one finger, and the bottle when released returns to its natural position by the force of gravity.

This device is particularly useful in institutions in which the pharmacy has no porter attached to it. Espe-

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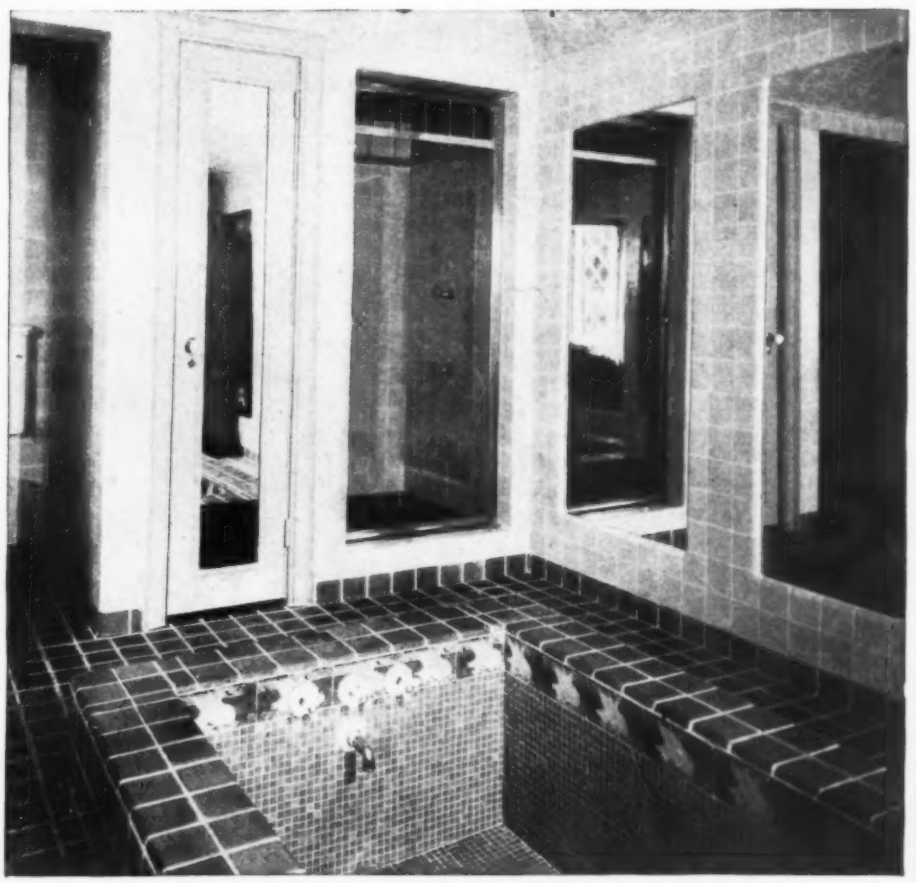

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cially is it useful in tuberculosis sanatoriums where the pharmacist is frequently either a patient or a former patient. The device can be constructed either individually or in groups. The individual frame, however, will be found more useful since it makes the device more flexible.

An Effective New Shaker for Damp Salt

A new product that will appeal to hospitals and other institutions throughout the country has recently been placed on the market. This new product is a salt shaker that through its patented construction will effectively shake damp salt. An outstanding feature of the device is that with dry salt it will shut off automatically if directly inverted, while the construction is such that the salt descends in a fine spray instead of all at one point.

The top is chromium plated to resist tarnish or discoloration, while the glass containers are furnished in crystal, green, amber and peach glass to harmonize with the table appointments. Inside the cap is a small insert of special material to which salt will not cling. This adds to the effectiveness of the shaker.

A Machine That Simplifies the Cutting of Gauze

A gauze and bandage stick cutting machine that is finding favor with a number of hospitals is, according to the manufacturers, "making the cutting of gauze, cellucotton, bandages and sleeping garments a short, pleasant, enjoyable process." A new self-measuring bandage stick holder, designed to go with the gauze and bandage stick

Bandage stick in holder ready to start the cut.

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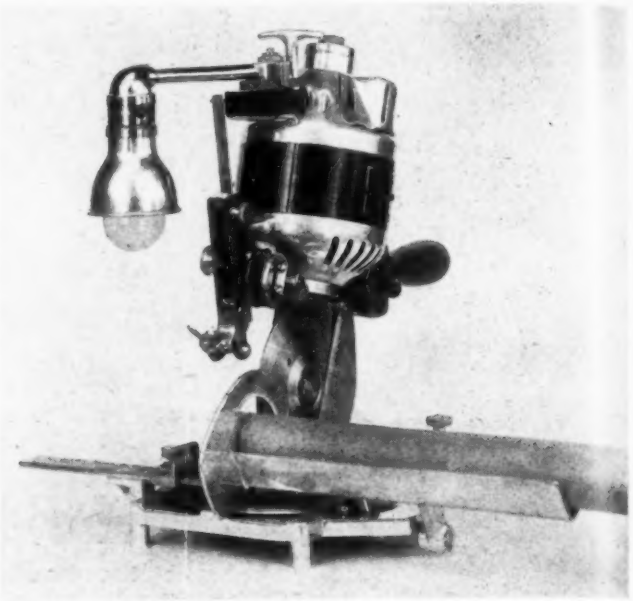


Cutting machine on the holder.

cutting machine, makes it possible for the cutting machine to be set in a few seconds' time. The advantage of this, according to the manufacturers, is that the cutting machine can be used as a regular cutter for cutting flat gauze, cellucotton, nurses' uniforms or sleeping garments. It can then be placed on the bandage stick holder attachment to be used for cutting the bandage sticks.

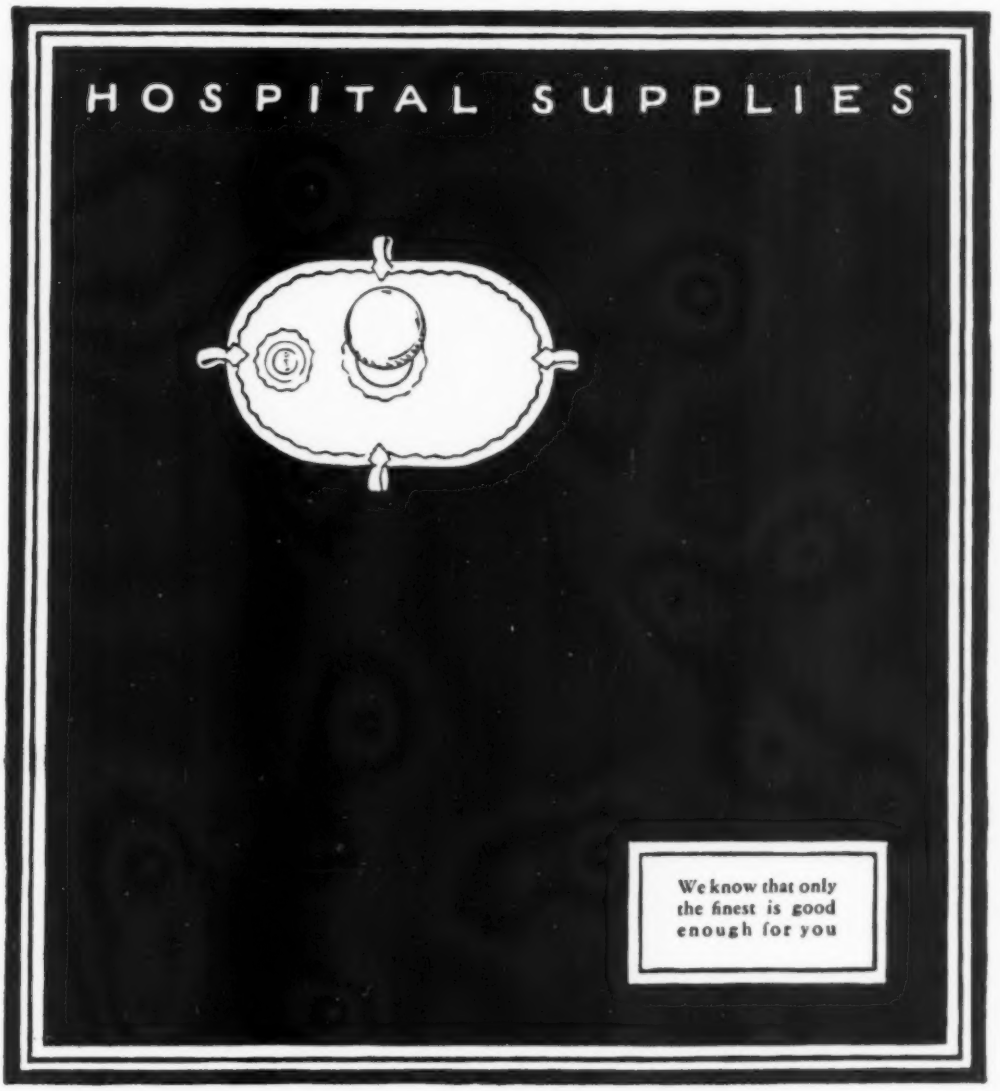
The holder is equipped with a stop that operates on a graduated scale and enables the nurse operating the machine to set the device so that a bandage of any width can be cut from the stick. The machine is equipped with guards so that it is absolutely impossible for the operator to be cut.

With the gauze cutting machine a dozen, fifty or a hundred sleeping garments may be cut out at one time, it is said. The machine is easily operated and is light enough to lift easily from one table to another. A simple device enables the machine to sharpen itself by throwing a small lever and letting it run, according to the manufacturers.

Helping the Hospital Protect Its Water Supply

An outstanding instance in which the city health department may serve the hospital is by having the sanitary engineers of the department investigate and advise concerning the safety of the hospital's water supply, according to Dr. Arnold H. Kegel, commissioner of health, Chicago, whose paper delivered at the American Hospital Association convention in Atlantic City stressed the relationship of hospitals to the health departments of large cities.

Concerning dangerous cross connections in the hospital, Doctor Kegel made the following statements: "In a recent survey it was found that 98 per cent of the hospitals investigated have dangerous cross connections by which sterilized water prepared for sterile purposes becomes contaminated. This was pointed out one year ago at the annual meeting of the American Hospital Association since which time every progressive manufacturer of sterilizing equipment has made changes to over-



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come these dangers. This has been a decided step forward in the control of infections in new hospitals or in hospitals constructed during the past year. Only a small percentage of the older hospitals have made changes in their dangerous existing equipment.

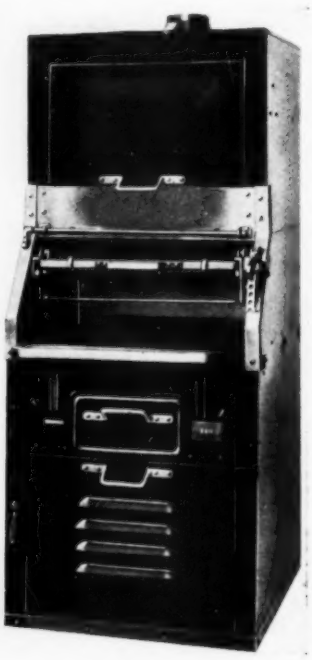
"Furthermore, cross connections in sterilizing equipment represents only a part of the distribution of infections through cross connections. It has been demonstrated that cross connections between clean water supplies and filters, reheaters, bedpan washers, therapeutic bathtubs and even toilet bowls and sewers exist in large numbers. It has been shown by color tests that water from these receptacles can enter the sterile water supply. The inspection of plumbing in a new, large hospital recently completed in Chicago, showed that the contents of the bedpan washer could be siphoned into the clean water supply of the hospital.

"It is possible that delay in making corrections in old hospitals is due to a dependence of the hospital management upon janitors and engineers for opinions concerning the safety of the water supply. Such persons, we have found, are incapable of determining the safety of a hospital's water supply."

A Brand New Development in Broilers

A new broiler that represents a real development in broilers is now on the market, with the manufacturers claiming that it broils 25 per cent faster, produces better broiled foods and uses far less gas than ordinary broilers.

The principle is said to be entirely new. Radiant heat is produced on the face of porous alundum slab. The gas is forced through the slab and lighted on the exposed face, which it quickly brings to incandescence, thus producing a radiant bed of fire like that produced by charcoal. The advantage is that the heat can be produced almost instantly at a turn of the switch. It does away with charcoal and ash handling, fire building and tending. In operation, the radiant slab projects a heat of 1,300 degrees downward as compared with an ordinary burner which produces only 750 degrees, the most of which rises.



The radiant heat has a penetrating quality that cooks the food 25 per cent faster than any other known method, thereby preserving the vitamins and retaining the juices. Gas consumption is greatly reduced by the new method of combustion. The upkeep costs little. The broiler is exceedingly easy to operate with the entire control centered in a single switch. For this reason the service required by kitchen employees is greatly reduced.

Tests over the last two years and under the most severe conditions have proved the success of the broiler.